2001 MIRAGE CATALOG

VHF/UHF Solid State Amplifiers

MIRAGE . . . 160 Watts on 2 Meters!

Turn your mobile, base or handheld into 160 Watt powerhouses and talk further, longer, clearer . . . All modes: FM, SSB, CW . . . Superb GaAsFET preamp . . . Overdrive, high SWR, Over-temperature protection . . . Remote controllable . . .

World's most popular 2-Meter BRICK!

In Stock at Ham Dealers everywhere!

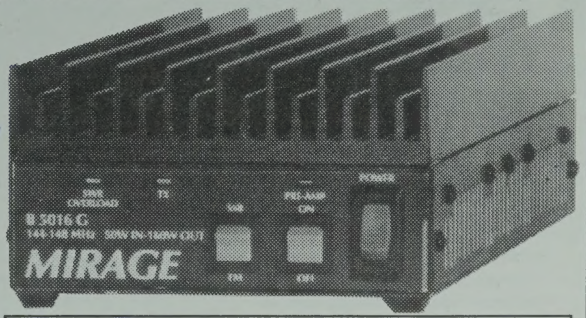
B-5016-G

$299

Suggested Retail

Call your dealer for your best price!

- *160 Watts output*
- *All modes: FM, SSB, CW*
- *Low noise GaAsFET preamp*
- *Fully Protected*
- *Automatic RF sense T/R switch*
- *Remote Controllable*



MIRAGE's most popular amplifier gives you 160 Watts of brute output power for 50 Watts in!

The B-5016-G is ideal for your 20 to 60 Watt 2 Meter mobile or base station. *Power Curve* chart shows typical output power for your input power.

You'll talk further, longer and clearer on all modes -- FM, SSB or CW -- and hear weak signals better than you've ever heard before!

You get a low noise GaAsFET preamp with an excellent 0.6 dB noise figure for pulling out weak signals. You can select a high 20 dB gain or a lower 15 dB gain to minimize receiver overload and intermod problems.

The B-5016-G is legendary for its ruggedness. *We know of one that has been in constant use since 1979!*

Your B-5016-G is *fully protected* with features found only in expensive commercial amplifiers.

High SWR or excessive input power can damage your amplifier. Protection circuits automatically bypass your amplifier to prevent damage and an LED lights to warn you.

Your expensive power transistors are protected from overheating by *MIRAGE's Therm-O-Guard™*. It automatically shuts down and bypasses your amplifier if needed.

The B-5016-G knows when you're transmitting and kicks in 160 Watts of power. Adjustable time delay gives you smooth transmit/receive switching. Also has remote external keying.

Power Curve -- typical Mirage B-5016-G output power									
Watts Out	130	135	140	145	150	155	160	160+	160+
Watts In	20	25	30	35	40	45	50	55	60

You can remotely control your B-5016-G and place it out of the way. An RC-1, $45, Remote Control Head (*with B-5016-G mod*) lets you turn *power on/off, preamp on/off, select SSB/FM.*

Extra heavy-duty heatsink spans entire length of cabinet. Draws 17 to 22 amps from 13.8 VDC. 12x3x51/2 inches.

More 160 Watt, 2 Meter Amplifiers . . .

B-2516-G, $299. For 10 to 35 Watt mobile or base stations. 160 Watts out for 25 Watts in.

B-1016-G, $379. *MIRAGE's most popular dual purpose HT or mobile/base amplifier.* 160 Watts out/10 Watts in. For 0.2-15 Watt transceivers.

B-215-G, $379. *MIRAGE's most popular handheld amp.* 150 Watts out/2 Watts in; 160 Watts out/3.5 Watts in. For 0.25 to 5 Watt handhelds.

MIRAGE . . . 300 BruteForce™ Watts on 2 Meters!

B-5030-G

$669

Suggested Retail

MIRAGE RUGGED!

Power Curve -- typical Mirage B-5030-G output power							
B-5030-G	--	--	--	55	150	220	300
B-2530-G	10	30	95	140	250	300	--
B-1030-G	30	80	225	270	300	--	--
Watts In	.5	1	3	5	10	25	50

The MIRAGE B-5030-G gives you 300 Watts of brute power for 50 Watts input on all modes -- FM, SSB, or CW!

Ideal for 20 to 60 Watt 2 Meter mobile or base. *Power Curve* chart shows typical output power.

Hear weak signals -- low noise GaAsFET preamp gives you excellent 0.6 dB noise figure. Select 15 or 20 dB gain.

Heavy-duty heatsink spans entire length of cabinet -- prevents overheating. Power transistors protected by Mirage's *Therm-O-Guard™*.

Fully protected from high SWR and excessive input power. Has warning LED. Has smooth adjustable Transmit/Receive switching with remote external keying.

Draws 48 amps at 13.8 VDC. Measures 12x12x5 inches.

More 300 Watt 2 Meter Amplifiers . . .

B-2530-G, $689. For 10 to 35 Watt mobile or base stations. 300 Watts for 25 Watts in.

B-1030-G, $689. Mirage's most popular dual purpose HT or mobile/base amplifier. 300 Watts out for 10 Watts in. For 0.2-15 Watt transceivers.

MIRAGE . . . the world's most rugged VHF/UHF amplifiers!

MIRAGE...Dual Band 144/440 MHz Amp

Boost your dual band handheld to 45 watts on 2 meters or 35 watts on 440 MHz . . . Automatic Band Selection . . . Single connector for dual band radios/antennas . . . Full Duplex operation . . . Reverse polarity protection . . . Mobile bracket . . .

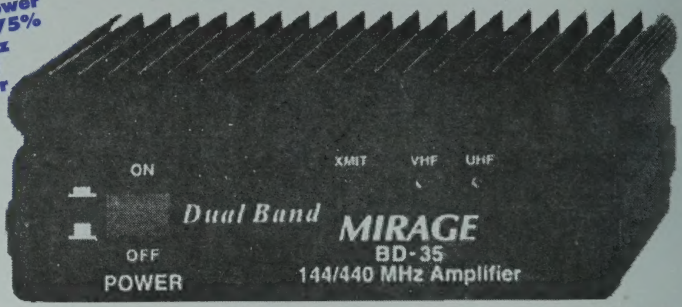
NEW LOW PRICE!!!

BD-35

$159.95

Suggested Retail

Get 50% more power on 2 Meters and 75% more on 440 MHz than our nearest competition -- for $60 less than their list price!



Call your dealer for your best price!

- *45 Watts on 2 Meters / 35 W on 440 MHz*
- *Automatic Band Selection*
- *Single Connectors for dual band radios and antennas*
- *Full Duplex Operation*
- *"On-Air" LEDs*
- *Reverse polarity protection*
- *Includes mobile bracket*
- *Small size: 5x1¾x5 inches*
- *Works with all FM handhelds*
- *One year Mirage Warranty*

Add this Mirage dual band amp and boost your HT to 45 watts on 2 Meters or 35 watts on 440 MHz -- that's 50% more power on 2 Meters and 75% more power on 440 MHz than our nearest competition -- for $60 less than their list price!

Your handheld becomes a powerful mobile or base when you need it.

Turn "You're breaking up . . . Can't copy" into "Solid copy . . . Go ahead."

Talk further . . . Reach distant repeaters . . . Log onto faraway packet bulletin boards.

Works with all FM handhelds up to 7 watts. *Power Curve* chart shows typical output power for your input power.

Power Curve -- typical BD-35 output power for your HT input										
Watts Out (2 Meters)	*10*	*18*	*30*	*40*	*45*	*45+*	*45+*	*45+*	*45+*	*45+*
Watts Out (440 MHz)	*4*	*10*	*16*	*26*	*32*	*35*	*35+*	*35+*	*35+*	*35+*
Watts In	*.25*	*0.5*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*

Full Duplex Operation

Mirage's exclusive *FullDuplexAmp*™ lets you talk on one band and listen on the other band at the same time -- *just like a telephone conversation!* (Requires compatible HT)

Mirage BD-35 gives you the most for your money! Here's why . . .

. . . ***Automatic frequency band selection*** -- you'll never forget to switch bands

. . . ***Single input connector and single output connector for both bands*** -- easy to use with dual band radios and antennas

. . . ***First-class strip-line techniques*** -- superb RF performance and reliablity

. . . ***Custom wrap-around heatsink*** -- provides excellent heat distribution

. . . ***Reverse Polarity Protection*** -- saves your amp if you connect power backward

. . . ***Automatic RF sense transmit/receive switch*** -- makes operation easy

. . . ***Low input SWR*** -- keeps your handheld safe from overheating

. . . ***"On Air" LEDs*** -- tell you which band is transmitting

. . . ***Free mobile mounting bracket***

. . . ***Small Size:*** just 5x1¾x5 inches

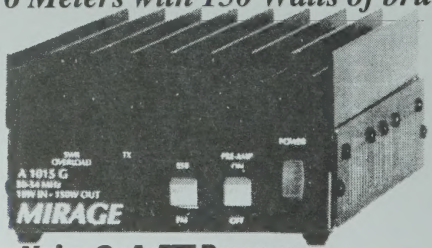
. . . ***Full one year MIRAGE warranty***

MIRAGE...6 Meter Amplifier

Bust through 6 Meters with 150 Watts of brute power and work exotic DX!

FCC TYPE ACCEPTED

MIRAGE RUGGED!



Low Noise GaAsFET Preamp

A built-in low noise GaAsFET receive preamp gives you 20 dB gain -- Lets you dig out weak signals and score exotic DX on sporadic E!

A-1015-G

$389

Suggested Retail

The A-1015-G is the world's most popular all mode FM/SSB/CW 6 Meter amplifier.

Bust through 6 Meters with 150 Watts of brute power and work exotic DX! Power Curve chart shows typical output power.

The A-1015-G is ideal for your 1 to 15 watt transceiver, mobile or base station.

You'll talk further, longer and clearer on all modes -- FM, SSB or CW. Hear weak signals better than you've ever heard before! Get up to 150 powerful watts.

Extra heavy-duty heatsink spans entire length of cabinet. Draws 18-22 amps at 13.8 VDC. Weighs just 5 lbs, measures a compact 12"x3"x5.5 inches.

Power Curve -- typical B-34-G output power										
Watts Out	*6*	*22*	*42*	*63*	*84*	*98*	*122*	*142*	*150*	*150+*
Watts In	*.25*	*1*	*2*	*3*	*4*	*5*	*7*	*9*	*10*	*15*

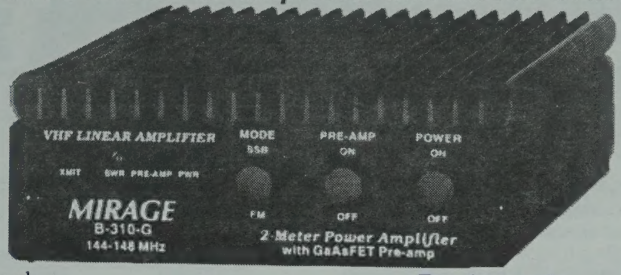
MIRAGE . . . 100 Watts . . . $199

Boost your 2 Meter HT or multimode to a super powerful 100 watts . . . All modes: FM, SSB, CW . . . 15 dBGaAsFET receive preamp . . . Reverse polarity protection . . . Silent cooling fan . . . Free HT-to-amp coax and mobile bracket!

In Stock at ham dealers everywhere!
Call your dealer for your best price

B-310-G
$199
Suggested Retail

MIRAGE RUGGED!



Power Curve -- *typical B-310-G output power*							
Watts Out	25	50	75	95	100	100+	100+
Watts In	.25	0.5	1	2	4	6	8

For an incredibly low $199, you can boost your 2 Meter handheld to a powerful 100 watt mobile/base!

Turn "You're breaking up . . . Can't copy" into "Solid Copy . . . Go ahead."

Talk further . . . Reach distant repeaters . . .Log onto faraway Packet bulletin boards.

This rugged Mirage B-310-G amplifier operates all modes: FM, SSB and CW. It's perfect for all handhelds up to 8 watts and multi-mode SSB/CW/FM 2 Meter rigs

Low Noise GaAsFET preamp

A built-in low noise GaAsFET receive preamp gives you 15 dB gain -- lets you dig out weak signals.

Fully Protected

SWR *Protection* prevents damage from antennas whipping in the wind. Reverse Polarity *Protection* can save your amp if you connect power backwards.

Compact but Powerful

Mirage's integrated *HeatsinkCabinet*™ and whisper quiet fan gets heat out fast!

The results? An ultra-compact 4¾x1¾x7¾ inch 2½ pound amplifier that delivers a *super powerful* 100 watts. It'll get you through the most congested bands and snag a rare contact!

Free Accessories

Free 3 foot handheld to B-310-G coax cable -- just plug and play! ***Free*** mobile bracket! ***Free*** rubber mounting feet !

Plus More . . .

Automatic RF sense Transmit/Receive switch. Remote keying jack. LEDs monitor "On Air", high SWR, pre-amp, power. Push buttons select SSB/FM, pre-amp, power. Draws 15 amps at 12-15 VDC.

Full one year MIRAGE warranty

With Mirage's legendary ruggedness, you may never need our superb warranty.

MIRAGE . . . 35 Watts for handhelds

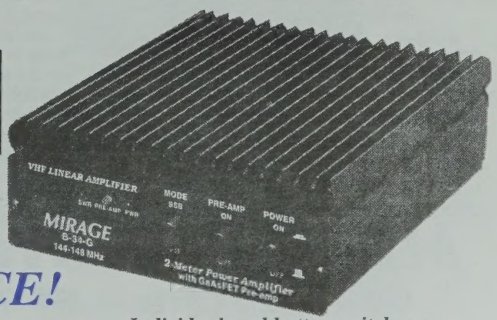
Add this Mirage amp to your 2 Meter handheld and get 35 watts output . . . Talk further, longer, clearer . . . 18 dB GaAsFET preamp . . . All modes: FM, SSB, CW . . . Mobile bracket . . . Reverse polarity protection . . . Works with all handhelds . . .

Call your dealer for your best price!

- *35 Watts output*
- *All modes: FM, SSB, CW*
- *18 dB GaAsFET preamp*
- *Reverse polarity protection*
- *Includes mobile bracket*
- *Auto RF sense T/R switch*
- *Custom heatsink, runs cool*
- *Works with HTs up to 8 watts*
- *1 year MIRAGE warranty*

Power Curve -- typical B-34-G output power										
Watts Out	*8*	*12*	*18*	*30*	*33*	*35*	*35+*	*35+*	*35+*	*35+*
Watts In	*.25*	*0.5*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*

B-34-G
$89.95
Suggested Retail



For an incredibly low $89.95, you can boost your 2 Meter HT to 35W -- the power of an expensive mobile!

Your handheld becomes a powerful mobile or base when you need it -- for a lot less money.

Turn "You're breaking up . . . can't copy you" into "Solid copy . . . Go ahead."

Talk further . . . Reach distant repeaters . . . Log onto faraway packet bulletin boards.

This rugged Mirage amplifier operates *all modes*: FM, SSB and CW. Unlike lesser *FM only* handheld amps, the B-34-G is perfect for both handhelds *and* multi-mode SSB/CW/FM 2 Meter rigs.

A built-in *low noise* GaAsFET receive preamp gives you 18 dB gain -- lets you dig out weak signals. Measures 5¼x1¾x4¾ in.

Works with all handhelds up to 8 watts. *Power Curve* chart shows typical output power for your input power.

NEW LOW PRICE!

Mirage's B-34-G is the best handheld amplifier money can buy!

Here's why . . .

. . . ***First-class strip-line techniques and modular construction*** -- gives you superb RF performance and unsurpassed reliability.

. . . ***Custom wrap around heatsink*** -- provides excellent heat distribution -- runs cool for extra long life

. . . ***Reverse Polarity Protection*** -- this Mirage feature can save your amp -- and your pride -- if you connect power backward

. . . ***Automatic RF sense transmit/receive switch*** -- make operation easy

. . . ***Low input SWR*** -- keeps your handheld safe from overheating

. . . ***Individual pushbutton switches*** -- lets you select FM/SSB operation, receive preamp on/off and power on/off

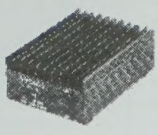
. . . ***LED indicators*** -- signal On-Air, receive preamp ON and power ON

. . . ***Free mobile mounting bracket and mounting hardware***

. . . ***Full one year MIRAGE warranty***

. . . ***Legendary MIRAGE ruggedness***

35 watts, FM only . . . $69.95



NEW LOW PRICE! **B-34, $69.95.** 35 watts out for 2 watts in. Similar to B-34-G but FM only, less pre-amp, mobile bracket. Just 3⅛x1¾x4¼ in.

MIRAGE . . . HT Docking Boosters!

Instantly convert your handheld into a powerful mobile or base station!

Slide your handheld into a MIRAGE Docking Booster and your handheld instantly becomes a powerful mobile or base station!

MIRAGE Docking Boosters . . .
- boost your RF power to mobile or base station levels, up to 50 Watts
- replaces your HT battery
- is a secure and convenient HT holder

Only MIRAGE Docking Boosters have selectable HT voltages that let you use most handhelds old or new. Requires 13.8 VDC.

You can place it on your dashboard or table or mount it securely with its mounting bracket and tilt it for convenient operation.

Choose from two models, B-24-G for 2 Meter handhelds and BD-25 for dual band 2 Meter/440 MHz handhelds.

Both HT docking boosters are covered by MIRAGE's superb one year warranty.

B-24-G
$114.95
Suggested Retail

BD-25
$164.95
Suggested Retail

Power Curve -- typical B-24-G ouput power							
Watts Out	*3*	*10*	*21*	*35*	*50*	*50+*	*50+*
Watts In	*.25*	*.5*	*1*	*2*	*4*	*6*	*8*

Power Curve -- typical BD-25 ouput power							
Watts Out (2 Meters)	*30*	*45*	*45*	*45*	*45+*	*45+*	*45+*
Watts Out (440 MHz)	*12*	*23*	*30*	*35*	*35+*	*35+*	*35+*
Watts In	*1*	*2*	*3*	*4*	*5*	*6*	*7*

2 Meter handhelds . . . B-24-G

B-24-G, $114.95 for 2 Meter FM handhelds gives you up to 50 Watts output with just .5 to 8 Watts input -- see Power Curve. Has 18 dB GaAsFET preamp with on/off switch. Has Preamp on, On Air and Transmit LEDs.

Compact 3¼x3¼x4¼ inches. When ordering, choose an adapter to fit your handheld -- *see Adapter chart.*

144/440 MHz handhelds . . . BD-25

BD-25, $164.95 for dual band FM HTs. Up to 45 Watts on 2 Meters and 35 Watts on 440 MHz with .5 to 8 Watts input -- *See Power Curve.*

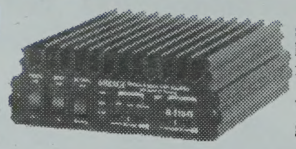
MIRAGE's *FullDuplexAMP*™ lets you talk on one band and listen on the other band at the same time. Requires compatible HT. Has automatic band selection. Has Frequency Band and Power On LEDs, Reverse Polarity Protection, On/Off switch. Super compact 3¼x3¼x5¼ inches fits anywhere.

When ordering, choose an adapter to fit your handheld -- $9.95 each -- *see Adapter chart.*

Adapter	Compatible Handhelds
ICOM	ICOM and compatible radios
MI-1	IC-2N/02N/3N/12N/2G/3G/12G/23/2AT/HTX-202
MI-2	IC-2S/2SAT/2SR/3S/3SAT/3SR/24/W2/X2, etc.
MI-3	IC-W21/X21/W21T/X21T, etc.
MI-4	IC-T7/T22/T42/W32, etc.
YAESU	YAESU and compatible radios
MY-1	FT-23/204/73/704/104/728, etc.
MY-2	FT-24/74/205/705/305/805/729, etc.
MY-3	FT-11/FT51, etc.
MY-4	FT-50/40/10, etc.
KENWOOD	KENWOOD and compatible radios
MK-1	TH-25/25G/45/45G/55/75/77, etc.
MK-2	TH-22A/22AT/42A/42AT/59/79/79E, etc.
STANDARD	STANDARD and compatible radios
MS-1	C150/C450/C520/C550/620, etc.

Adjustable 2 Meter Power . . . 5 to 100 Watts

NEW!



B-510-G
$229.95
Suggested Retail

Power Curve -- typical B-24-G ouput power								
Watts Out	*55*	*80*	*85*	*90*	*100*	*90*	*100*	*95*
Watts In	*.25*	*.75*	*1*	*2*	*5*	*10*	*25*	*50*

**Unit automatically adjusts to low/high power HT/mobile*

MIRAGE's *universal* B-510-G is a professional grade 2-Meter 100 Watt amp for handhelds *and* mobiles. It has unique features not found in ordinary amplifiers.

Use any 2-Meter HT or mobile up to 50 Watts in any mode FM/SSB/CW and you'll get the same power out. *See Power Curve.*

MIRAGE's exclusive *SmartInput*™ automatically determines if you have a low or high power handheld or mobile. If you are low power, gain is increased so you get the same power out as with higher power.

You get front panel *adjustable* output power from 5 to 100 Watts. MIRAGE's LED *PowerGraph*™ indicator makes power adjustment easy.

You can select . . . an *adjustable* gain (5 to 15 dB) low noise GaAsFET preamp for weak stations . . . a 15 dB attenuator to reduce intermod . . . or bypass (each has a bright LED indicator).

High SWR Protection with LED, Over Temperature Protection with LED, Reverse Polarity Protection,k "on-air" LED.

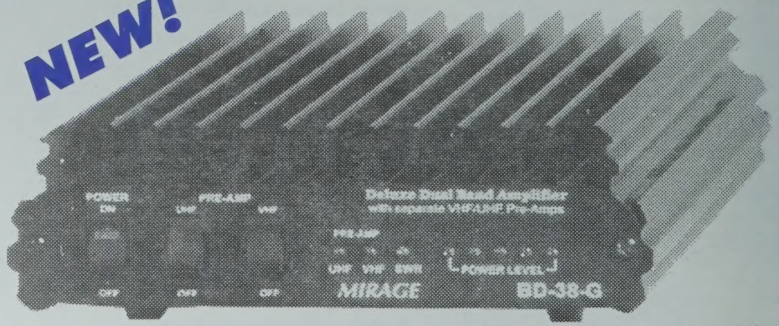
Includes *free* PL-259 to BNC HT patch cable. Super compact 6½Wx2¼Hx9D inches.

MIRAGE BruteForce™ dual band amp

70 / 60 Watts -- HT *or* Mobile

BD-38-G
$299.95
Suggested Retail

NEW!



MIRAGE's *BruteForce*™ dual purpose amplifier gives you 70 Watts of brutal power on 2 Meters and 60 Watts on 440 MHz! You can use your low power handheld or mobile!

It's two amplifiers in one. An auto switch select determines use of VHF or UHF.

MIRAGE's LED *PowerGraph*™ indicates output power and comes completely alive with 70/60 W#atts.

Low noise 15 dB GaAsFET preamp lets you dig out really weak stations. You get separate 144/440 MHz preamp LEDs.

Has HI-SWR, Over-Temperature and Reverse Polarity Protection.

Wrap around heatsink gives excellent heat dissipation for cool operation. Compact 6½Wx2½Hx9D inches. Has *Mirage's* superb one year warranty.

Includes *free* BNC to PL-259 mobile patch cable and rubber mounting feet. Draws just 13.8 VDC at 15 amps. Input power from 250 mW to 5 Watts.

MIRAGE 1¼ METER AMPLIFIERS --- 223-225 MHz

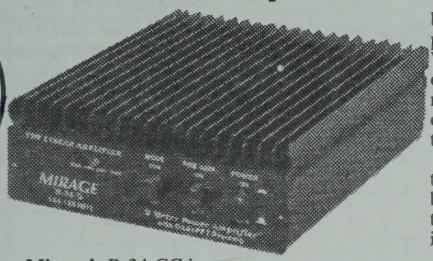
	C-22-G	C-106-G	C-211-G	C-1012-G
	2W In - 20 W Out	10W In - 60 W Out	2W In - 110 W Out	10W In - 110 W Out
	$169 Suggested Retail	**$239** Suggested Retail	**$339** Suggested Retail	**$339** Suggested Retail
SPECS:				
RF Power In:	100 mW to 5 Watts	300 mW to 15 Watts	300 mW to 4 Watts	300 mW to 15 Watts
RF Power Out:	20 Watts	60 Watts	110 Watts	120 Watts
Current/Volts:	5 Amps@13.8 Volts	10-12 Amps@13.8 Volts	25 Amps@13.8 Volts	18-20 Amps@13.8 Volts
Size:	3.5x2x7 inches	8x3x5.5 inches	12x3x5 inches	12x3x5.5 inches
Weight:	1.25 lbs.	3 lbs.	5 lbs.	5 lbs.

	C-2512-G	C-5012-G	C-1022-G	C-2522-G	C-5022-G
	25W In-120W Out	50W In-120W Out	10W In-220W Out	25W In-220W Out	50W In-220W Out
	$315 Suggested Retail	**$334** Suggested Retail	**$655** Suggested Retail	**$655** Suggested Retail	**$639** Suggested Retail
SPECS:					
RF Power In:	300 mW to 5 W	35W to 55 W	1 W to 10 W	1 W to 30 W	35 W to 55 W
RF Power Out:	120 Watts	120 Watts	220 Watts	220 Watts	220 Watts
Current/Volts:	18Amps@13.8 Volts	18Amps@13.8 Volts	48Amps@13.8 Volts	48Amps@13.8 Volts	48Amps@13.8 Volts
Size:	12x3x5.5 inches	12x3x5.5 inches	13x10x5 inches	13x10x5 inches	12x3x5.5 inches
Weight:	5 lbs.	5 lbs.	13 lbs.	13 lbs.	13 lbs.

MIRAGE COMMERCIAL POWER AMPLIFIERS

Commercial Amplifier . . . 30 Watts Out . . . $159.95

FCC Type Accepted New!



B-34-GC
$159.95
Suggested Retail

Mirage's B-34-GC is a two-way radio signal amplifier (or booster) designed for commercial mobile or fixed location use.

This amplifier is specifically designed to boost the range of low power (less than 3 Watts output) mobile or handheld two-way radios by increasing output power nearly ten times.

This unit also contains a receive signal booster that increases the signal level of incoming signals.

FEATURES:
- **Output power of 15 to 30 Watts.**
- **Wide input power range (from 1/2 to 3 Watts).**
- **GaAsFET receive amplifier to boost reception of weak stations.**

SPECIFICATIONS:
Frequency: 150-162 MHz
Duty Cycle: Intermittent (ICAS)
RF Input: 3 Watts Maximum
RF Output: 25 Watts TYPICAL
RF Connectors: SO-239 (2) UHF Female
Receive Preamp: 18 dB TYPICAL
Supply Voltage: 11-15 VDC
Negative Ground
Transmitting Current: Less than 4 Amps
Fuse: Fast Blow, 7 Amp
Input/Output Impedance: 50 Ohms
Warranty: 1 year parts and labor

UHF Commercial Amplifier

PAC-15-100C
$395
Suggested Retail

FEATURES:
- Over-temp Sensing that Bypasses Amp when safe operating temperatures are exceeded.
- Heavy-duty heatsink, finned on 3 sides.

SPECIFICATIONS:
Power Out . . . . 100 Watts at 10 watts in
Power In . . . . . 5 to 25 Watts
Frequency Coverage . . . . . 450-475 MHz
VSWR . . . . . Less than 1.5:1
450-470 Mhz in bypass mode
Impedance . . . . . 50 Ohms, nominal
Supply Voltage . . . . . 13.8 VDC nominal
nominal (11-16 VDC)
Supply Current . . . . . 20-23 Amps
Connectors SO-239
RCA phono jack (remote control)
Size . . . . . 2.375Hx7Wx10D inches
Service . . . . . FM, multi-purpose

VHF Commercial Amplifiers

PAC-10-70-B **$269** Suggested Retail 150-174 MHz x4 MHz

FEATURES:
- Over-temp Protection
- Heavy-duty heatsink, finned on 3 sides.

SPECIFICATIONS:
PAC-10-70B:
Power Out . . . . . 70 Watts at 10 Watts in
Power In . . . . . 1/2 to 15 Watts
PAC-30-130B:
Power Out . . . . . 130 Watts at 30 watts in
Power In . . . . . 10 to 30 Watts
Specs for both amps:
Frequency Coverage . . . . . (Any 4 MHz)
150-174 MHz
VSWR . . . . . Less than 1.5:1
Impedance . . . . . 50 Ohms, nominal
Supply Voltage . . . . . 13.8 VDC nominal

Designed for heavy duty commercial use!

PAC-30-130-B **$299** Suggested Retail 150-174 MHz x6 MHz

nominal (11-16 VDC)
Supply Current . . . . . 8 Amps nominal
Connectors SO-239
RCA phono jack (remote control)
Service . . . . . FM, multi-purpose

Marine Band Handheld Amplifier

. . . 25 Watts out with just 2 Watts in!

M-120-G
$199
Suggested Retail
Covers 156-158.5 MHz. Marine Band Amp with 20 dB preamp gain.

http://www.mirageamp.com

MIRAGE REPEATER AMPLIFIERS - VHF/UHF

MIRAGE Repeater amplifiers are designed for continuous duty

50, 144 and 220 MHz Models

FEATURES

Cool Running - A 10" high by 19" wide full finned rack-mounted heatsink keeps the transistor temperatures low for long life. The chassis cover is perforated so air convection will keep the circuit board area cool.

Dual Protection - The amplifiers have two temperature sensors; one on the heatsink and one on the circuit board. If conditions cause either to overheat, the amplifier will shut off until it cools down to a safe temperature.

Bypass Mode - These models will feed the exciter output straight through to the antenna in an over-temperature condition. The bypass mode can also be remotely selected by proper interfacing to the repeater controller. Either a relay contact or a TTL logic can be used to select the bypass mode or amplified mode of operation.

Reduced Relay Wear - The amps have a selectable long release time (adjustable up to 5 seconds) for the RF change-over relay. This prevents unnecessary action during repeater operation.

On-site Control - The bypass mode and relay release time can be selected with built-in switches. The operational MIRAGE RC-1 remote control box can be used to switch these functions up to 18 feet away from the amplifier.

440 MHz and ATV Models

FEATURES

Cool Running - A 10" high by 19" wide full finned rack mounted heatsink keeps the transistor temperatures low for long life. The chassis cover is perforated so air convection will keep the circuit board area cool. The RF board is low loss Teflon® for minimum dielectric heating.

Reliable - The RF change-over relay has been eliminated on this model to provide the highest order of reliability. Teflon® connectors are standard on this well-designed unit.

Protection - The amplifier will shut off if conditions cause the heatsink temperature to rise to a unsafe level.

All-Mode Operation - Class AB linear operation is rated for FM, SSB, CW, and ATV operation.

WARRANTY ON ALL REPEATER AMPLIFIERS

Warranty - Mirage repeater amplifiers are guaranteed for one year against failure due to defective workmanship/materials.

Specifications

MHz Freq Range	Model Number	Watts Power Input	Suggest Retail	Max Cont. Output (Watts)	Amps Nominal Current	Power Supply (VDC)	RF Connect
50-52	A1015R	.25-5	$579.00	98	18-20	13.8	Teflon SO-239
144-148	B215R	.25-1	$559.00	115	18-20	13.8	Teflon SO-239
145-148	B1016R	.25-3	$599.00	130	18-20	13.8	Teflon SO-239
145-148	B2516R	0.5-10	$549.00	111	16-18	13.8	Teflon SO-239
223-225	C211R	.25-0.5	$629.00	80	18-20	13.8	Teflon SO-239
223-225	C1012R	.25-6	$629.00	96	18-20	13.8	Teflon SO-239
223-225	C2512R	.05-15	$595.00	90	16-18	13.8	Teflon SO-239
440-450	D1010NR	.25-4	$654.00	80	15-16	13.8	Teflon"N" UG58AU
440-450	D3010NR	1-15	$625.00	75	14-15	13.8	Teflon"N" UG58AU
420-450 ATV	D100-ATVNR	.25-1	$654.00	52	14-15	13.8	Teflon"N" UG58AU
420-450 ATV	D1010-ATVNR	.25-4	$654.00	80	16-18	13.8	Teflon"N" UG58AU

MIRAGE SWR/Watt Meters - HF - VHF - UHF

FEATURES:

- Peak or Average Reading
- Reads SWR Directly - Without Extra Charts or Graphs
- Functions: Power Forward/Reverse Peak/Average and SWR

WARRANTY:
1 Year Parts & Labor

SPECIFICATIONS:

MODEL	PRICE	FREQ MHz	SWR SENS	PWR RANGE
MP-1	$235.00	1.8 to 30	1-2 Watts	25,200 & 2000 W
MP-2	$235.00	50 to 200	1-2 Watts	50,500 & 1500 W
MP-3	$265.00	420 to 450	5 Watts	5, 50 & 150 W

- Remote Coupler Mounting
- Line impedence - 50 ohms
- Insertion Loss-negligible
- Low battery Indicator
- Large Highly visible Meter
- Weight - 3.5 lbs.
- Power requirements 9-13.6 vDC or 9V Battery (not included)

For your nearest MIRAGE dealer: Call 800-647-1800

For Technical Information: Call 662-323-8287

MIRAGE products are distributed by many fine *MIRAGE* dealers worldwide. For dealers in Canada and other countries, please contact *MIRAGE*, **300 Industrial Park Road, Starkville, Mississippi, 39759, USA.**
• **VOICE:** 662-323-9715 • **FAX:** 662-323-6551 • **WEB SITE:** *http://www.mirageamp.com*

Technical Information

MIRAGE, 300 Industrial Park Road, Starkville, MS 39759 USA. **Phone:** 662-323-8287, **FAX:** 662-323-6551

Warranty Information

MIRAGE amplifiers and accessories are warranteed for (1) one year (parts and labor).

All prices and specifications are subject to change without notice or obligation. Catalog 01/99 © 1999 *MIRAGE COMMUNICATIONS EQUIPMENT*

MIRAGE AMPLIFIER SPECIFICATIONS

Model Number	Input Power Range	I (MAX) at 13.8 V	Wt lbs.	Size WxHxD inches	Pre Amp Gain	Retail Price	Typical Power Out for Watts in												
							.25	0.5	1	2	3	5	6	8	10	15	20	25	35	50
6 Meter 50-52 MHz																				
A-1015-G	.25-15	22	5	12x3x5½	20 dB	389.00	6	10	22	42	63	98	115	133	150	150+	--	--	--	--
2 Meter 144-148 MHz																				
B-24-G	.25-8	7	2½	3¼x3¼x4	18 dB	114.95	3	10	21	35	50	50	50+	50+	--	--	--	--	--	--
B-34	.25-8	4	½	3x1¾x4¼	NO	69.95	8	12	18	30	33	35+	35+	35+	--	--	--	--	--	--
B-34-G	.25-8	4	1	5¼x1¾x4¾	18 dB	89.95	8	12	18	30	33	35+	35+	35+	--	--	--	--	--	--
BD-25 (dual band)	.25-8	7	2½	3¼x3¼x4	18 dB	164.95	10	18	30	45	45	45+	45+	45+						
BD-35 (dual band)	.25-8	7	2	5x1¾x5	NO	159.95	10	18	30	40	45	45+	45+	45+	--	--	--	--	--	--
B-55-G	.25-10	7	2½	5¼x1¼x6¼	18 dB	118.95	8	10	13	28	39	50+	50+	50+	50+	--	--	--	--	--
B-215-G	.25-5	25	5	12x3x5½	20 dB	379.00	38	76	115	150	155	--	--	--	--	--	--	--	--	--
B-310-G	.25-8	15	2½	4¾x1¾x7¾	15 dB	199.00	25	50	75	95	97	100	100+	100+	--	--	--	--	--	--
B-320-G (HT)	.25-50	25	5	7¾x2¾x9¾	15 dB	449.95	132	165	175	190	200	--	--	--	--	--	--	--	--	--
B-320-G (mobile)	.25-50	25	5	7¾x2¾x9¾	15 dB	449.95	1.5	4	10	24	32	48	64	82	95	135	148	165	186	200
B-510-G	.25-50	15	5	6½x2¼x9	5-15 dB	229.95	55	75	85	90	32	100	95	100	90	100	95	100	100	95
B-1016-G	.25-15	25	5	12x3x5½	20 dB	379.00	15	30	60	100	130	150	153	155	160	160+	--	--	--	--
B-2516-G	0.5-30	22	5	12x3x5½	20 dB	299.00	--	0.5	11	24	35	56	69	91	111	135	153	160	160+	--
B-5016-G	1-60	22	5	12x3x5½	20 dB	299.00	--	--	5	15	23	52	75	99	119	125	130	135	145	160
B-1030-G	.5-20	48	15	13x10x5	20 dB	689.00	--	--	30	80	177	225	270	286	300	300+	300+	300+	--	--
B-2530-G	.5-35	48	15	13x10x5	20 dB	689.00	3.5	10	30	63	95	140	160	205	250	272	300	300+	--	--
B-5030-G	.5-60	48	15	13x10x5	20 dB	669.00	--	--	10	17	29	55	65	90	150	180	200	220	260	300+
1¼Meter 223-225 MHz																				
C-22-G	.1-5	5	1¼	3½x2x7	20 dB	169.00	3	6	10	20	30	36	--	--	--	--	--	--	--	--
C-211-G	.3-5	25	5	12x3x5½	20 dB	339.00	50	80	103	110	120	126	--	--	--	--	--	--	--	--
C-106-G	.3-15	12	3	8x3x5½	20 dB	239.00	3	5	11	23	34	46	51	57	60	60+	--	--	--	--
C-1012-G	.3-15	20	5	12x3x5½	20 dB	339.00	6	10	15	34	51	83	95	108	120	--	--	--	--	--
C-2512-G	.3-40	18	5	12x3x5½	20 dB	315.00	--	.5	6	14	21	38	47	60	70	92	107	120	--	--
C-5012-G	.35-55	18	5	12x3x5½	20 dB	334.00	--	--	3	11	17	31	42	65	77	82	87	93	108	120
C-1022-G	.25-10	48	15	13x10x5	20 dB	655.00	--	--	40	90	115	160	185	200	220	--	--	--	--	--
C-2522-G	.25-30	48	15	13x10x5	20 dB	655.00	1.5	5	12	29	45	79	102	140	162	193	217	220	--	--
C-5022-G	.35-55	48	15	13x10x5	20 dB	639.00	--	--	5	10	20	40	50	70	90	115	140	160	195	220
70 CM 420-450 MHz																				
D-15-N	.25-2	3	1¼	7½x3½x2	NO	189.00	3	7	13	18	--	--	--	--	--	--	--	--	--	--
D-26-N	.4-5	12	4	8¼x2½x7	NO	269.00	17	34	51	60	60	60	--	--	--	--	--	--	--	--
BD-25 (dual band)	.25-8	7	2½	3¼x3¼x4¼	NO	164.95	4	10	12	23	30	35	35+	35+	--	--	--	--	--	--
BD-35 (dual band)	.25-8	7	2	5x1¾x5	NO	159.95	4	10	16	26	32	35	35+	35+	--	--	--	--	--	--
D-100ATVN	0.5-5	20	5	12x3x5½	NO	414.00	15	32	52	--	--	--	--	--	--	--	--	--	--	--
D-1010-N	.30-15	20	5	12x3x5½	NO	395.00	5	16	28	53	73	85	90	100	110	--	--	--	--	--
D-1010-ATVN	1-15	20	5	12x3x5½	NO	414.00	5	16	28	53	73	85	90	100	--	--	--	--	--	--
D-3010-N	5-45	20	5	12x3x5½	NO	365.00	--	--	7	12	17	22	25	35	50	75	85	100	--	--
VHF/UHF/COMMERCIAL BAND AMPLIFIERS																				
PAC-10-70-B	.25-10	8	4	2¾x7x8	NO	269.00	5	8	12	18	26	40	47	60	70	--	(150-174 MHz)			
PAC-15-100-C	.25-15	23	5	2¾x7x10	NO	395.00	5	8	10	15	20	50	60	70	80	100	(450 - 475 MHz)			
PAC-30-130-B	.25-30	8	5	12x3x5½	NO	299.00	1	3	7	10	14	25	30	40	50	80	100	(150-174 MHz)		
M-120-G	.1-3	5	1¼	3½x2x7	20 dB	199.00	10	15	20	25	--	--	--	--	--	(156 - 158.5 MHz)				
REPEATER AMPLIFIERS																				
A-1015 R (6 Meter)	.25-5	20	12	10x19 htsnk	NO	579.00	6	10	22	42	63	98	--	--	--	--	--	--	--	--
B-215-R (2 Meter)	.25-1	20	12	10x19 htsnk	NO	559.00	22	38	115	--	--	--	--	--	--	--	--	--	--	--
B-1016-R (2 Meter)	.25-3	20	12	10x19 htsnk	NO	599.00	15	30	60	100	130	--	--	--	--	--	--	--	--	--
B-2516-R (2 Meter)	0.5-10	18	12	10x19 htsnk	NO	549.00	--	.5	11	24	35	56	69	91	111	--	--	--	--	--
D-1010-NR (70 CM)	.25--6	20	12	10x19 htsnk	NO	654.00	5	16	28	53	73	--	--	--	--	--	--	--	--	--
D-3010-NR (70CM)	0.5-15	18	12	10x19 htsnk	NO	625.00	--	--	7	12	17	22	25	35	50	75	--	--	--	--
D-1010-ATVNR	.25-4	18	12	10x19 htsnk	NO	654.00	5	16	28	53	73	80	--	--	--	--	--	--	--	--

MIRAGE 70 cm AMPLIFIERS - 420-450 MHZ - UHF

ALL UHF MODELS FEATURE . . .

- All-Mode FM, SSB, CW
- ATV Models Available
- Adjustable Delay for SSB
- Remote Control Outlet
- 50 ohm Impedance (input&output)
- Voltage 13.8 vDC

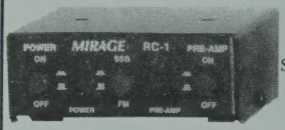
	D-15-N	D-26-N	D-1010-N	D-3010-N
	1W In-15W Out	2W In-60W Out	10W In-100W Out	30W In-100W Out
FEATURES	Special for ATV Service as well as SSB and FM All Solid State - No Relays No Remote Outlet Excellent for H/T's	Special for ATV Service as well as SSB and FM 1 Watt in will Give 51W out Excellent for H/T's	430-450 MHz SSB/FM Can be modified for ATV Service	430-450 MHz SSB/FM
	$189 Suggested Retail	**$269** Suggested Retail	**$395** Suggested Retail	**$365** Suggested Retail
SPECIFICATIONS:				
RF POWER IN	250mW to 2 Watts	400mW to 5 Watts	300mW to 15 Watts	5W - 45Watts
RF POWER OUT	2W In 20W Out	2W In 60W Out	10W In 100W Out	45W In 100W Out
CURRENT	3 Amps nominal	12 Amps nominal	20 Amps	20 Amps
SIZE	7.25" x 3.5" x 2"	8.25" x 2.5" x 7"	12" x 3" x 5.5"	12" x 3" x 5.5"
WEIGHT	1.5 lbs.	4 lbs.	6 lbs.	6 lbs.

MIRAGE AMATEUR TELEVISION AMPLIFIERS

	D-1010-ATVN	D-100-ATVN
	10W In - 52W Out (ATV-AVG) 10W In - 82W Out (ATV-PEP) 10W In - 100W Out (SSB/FM)	2W In - 52W Out (ATV-AVG) 2W In -82W Out (ATV-PEP) 2W In - 100W Out (SSB/FM)
	Specifically designed for amateur television 420 - 450 MHz	Specifically designed for amateur television 420-450 MHz
SPECIFICATIONS:		
RF POWER IN	1 W to 15 Watts	500mW to 5 Watts
RF POWER OUT	100W (SSB/FM), 52W (ATV)	52W
CURRENT	20 Amps	20 Amps
SIZE	12" x 3" x 5.5"	12" x 3" x 5.5",
WEIGHT	6 lbs.	6 lbs.

D-1010-ATVN
D-100-ATVN **$414** Suggested Retail

RC-1 - Remote Control Head
Use with most models



RC-1 **$45** Suggested Retail

FEATURES:

- Easy remote operation with most models
- Preamp On/Off
- Switch for SSB/FM operation
- 18 foot cabling included - Available in long lengths with special order
- Size: 3½" x 2¾" x 1½"
- Mod required for some models.

*Compatible with all MIRAGE amps except for the following amplifiers: B-24, B-34, 34-G, 310-G, 320-G, BD-25, BD-35, 510-G, C-22-G, D-15-N, 26-N, M-120 -G, PAC-10-70-B, PAC-15-100-C, PAC-30-130-B.

MIRAGE PREAMPLIFIERS - HF/VHF/UHF

KP-1

$139 Suggested Retail

MODEL
A. KP-1/10M
B. KP-1/6M
C. KP-1/2M
D. KP-1/220 MHz
E. KP-1/440 MHz

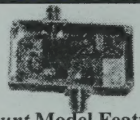
FREQUENCY
A. 28-30 MHz
B. 50-54 MHz
C. 144-148 MHz
D. 220-225 MHz
E. 430-450 MHz

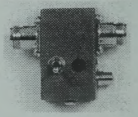
KP-1 *In-Shack* Model Features:
*Automatic RF Switching
*GaAsFET boosts weak receive signals
*In-Line design for easy operation
*High or Low switchable gain setting

KP-1 *In-Shack* Model Specifications:
Gain.....from 15 dB to greater than 25 dB
Noise.....less than 0.6 dB
Power Handling.....100 Watts
Size.....4¼x2 5/16x1 3/16 inches

KP-2

$195 Suggested Retail





KP-2 *Mast Mount* Model Features:
*Automatic RF Switching
*GaAsFET boosts weak receive signals
*Mast mounted design to reduce loss
*In-Line design for easy operation
*High or Low switchable gain setting

KP-2 *Mast Mount* Model Specifications:
Gain.....from 15 dB to greater than 25 dB
Noise.....less than 0.6 dB
Power Handling.....100 Watts
Voltage.....12-15 vDC
Size.....4¼x2 5/16x1 3/16 inches
2 1/8x1¼x1 1/8 inches

MODEL
A. KP-2/10M
B. KP-2/6M
C. KP-2/2M
D. KP-2/220 MHz
E. KP-2/440 MHz

FREQUENCY
A. 28-30 MHz
B. 50-54 MHz
C. 144-148 MHz
D. 220-225 MHz
E. 430-450 MHz

MIRAGE COMMUNICATIONS EQUIPMENT
300 Industrial Park Road
Starkville, MS 39759 USA

TO:

Bulk Rate
U.S. Postage
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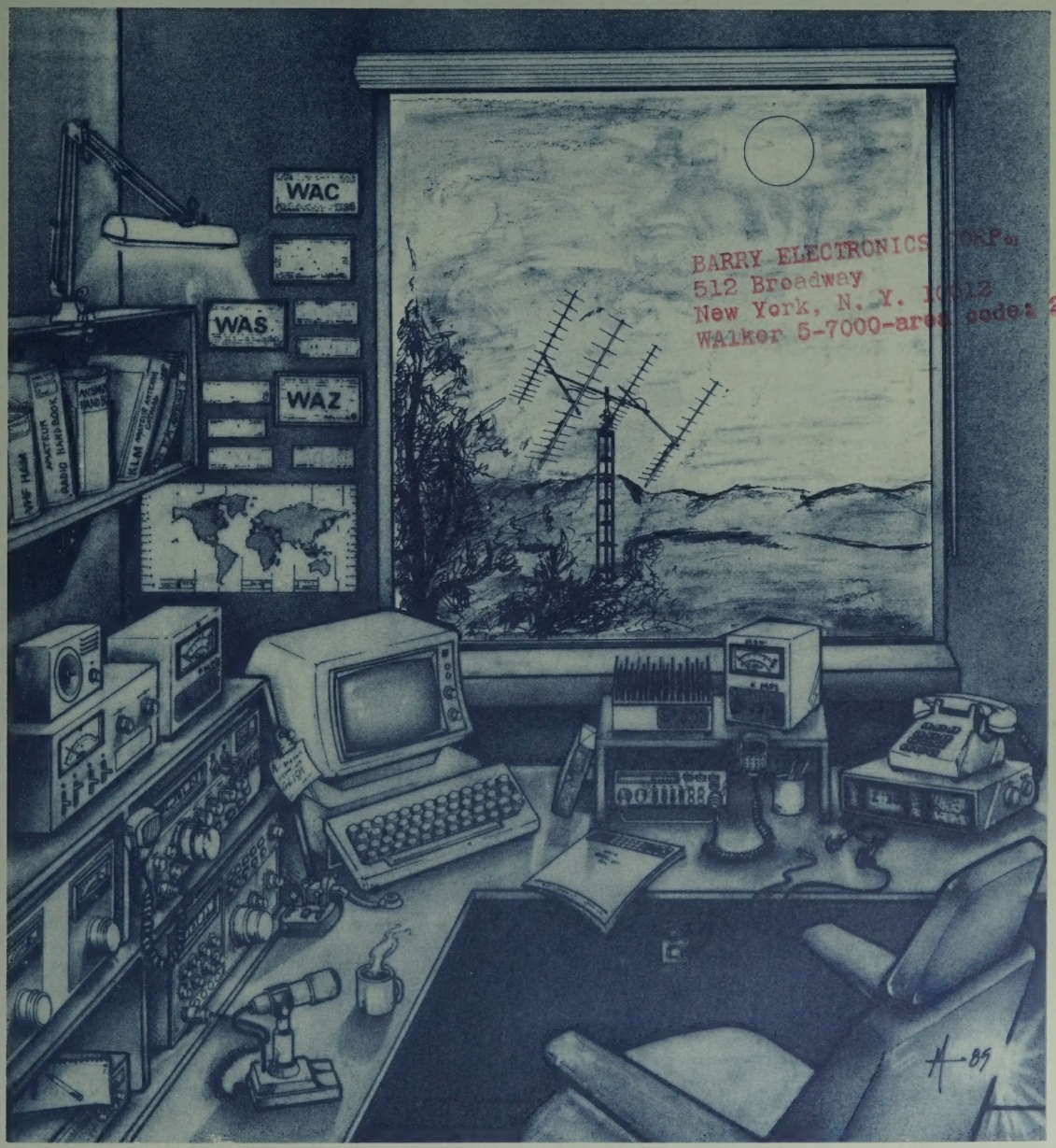
39762
Permit No. 59

MIRAGE /KLM

Your Quality & Performance Professionals



Mirage Communications Equipment, Inc.

P.O. Box 1000 *Morgan Hill, CA 95037* *(408) 779-7363*

MIRAGE /KLM

Hi

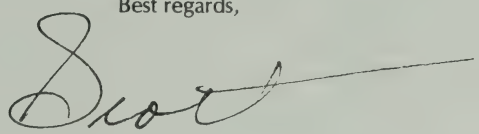
I'm the new owner of MIRAGE/KLM. This catalog features the major items of each of our product lines.

We've kept the "cream of the crop" of both staff and manufacturing employees and are working toward a completely automated order processing and shipping system. We now have new equipment and training in every department to improve our performance and our product quality standards. Each employee has been trained to apply the most efficient techniques and are being cross-trained to assure service during periods of peak demand.

We believe we have an excellent team to support and ensure a quality product and, most important, customer satisfaction.

We have the best warranty in the business on our amplifiers because we strive for quality and are willing to back our convictions. We are planning our research and development projects for the next year and will keep you advised as to new products that will be available.

Best regards,



W. M. Scott,
President/Owner

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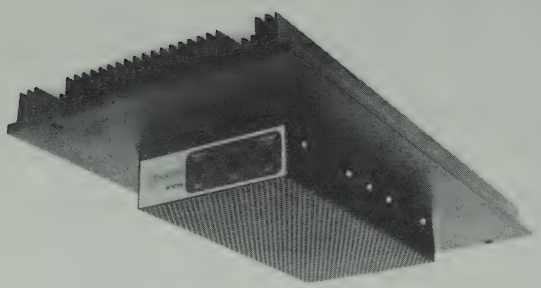
10-30-7LPA 31
6-30-15LPA 31

Accessories

..... 32

NOTE: This catalog does not provide all Antennas and Special Orders.

Mirage Repeater Amplifiers



These amplifiers were designed to meet the demand for rugged, reliable, cool running output stages for repeaters and other high-duty cycle applications. Models are available for the 144, 220, and 440 MHz Amateur Bands.

FEATURES — 144 and 220 MHz Models

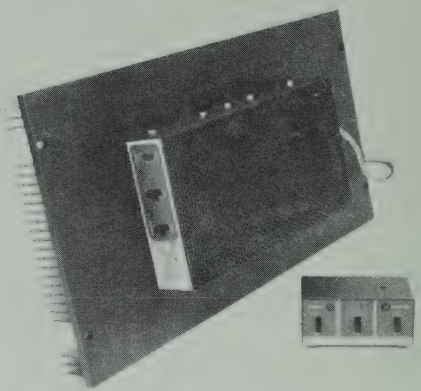
Cool Running—A 10" high by 19" wide full-finned rack-mounted heatsink keeps the transistor temperatures low for long life. The chassis cover is perforated so air convection will keep the circuit board area cool.

Dual Protection—The amplifiers have two temperature sensors; one on the heatsink and one on the circuit board. If conditions cause either area to overheat, the amplifier will shut off until it cools down to a safe temperature.

Bypass Mode—These models will feed the exciter output straight through to the antenna in an over-temperature condition. The bypass mode can also be remotely selected by proper interfacing to the repeater controller. Either a relay contact or TTL logic can be used to select the bypass mode or amplified mode of operation.

Reduced Relay Wear—These amps have a selectable long release time *(adjustable up to 5 secs.)* for the RF change-over relay. This prevents unnecessary relay action during repeater operation.

On-Site Control—The bypass mode and relay release time can be selected with built-in switches. The optional MIRAGE RC-1 remote control box can be used to switch these functions up to 18 feet away from the amplifier.



Remote Control—The normal RF sensing is easily defeated to allow external control of the power amplifier via a landline or RF link and interface unit.

All-Mode Operation—Class AB linear amplification allows use with SSB, CW or FM modes.

Contesters—Try these all-mode amplifiers out in your next contest!!

Warranty—RF power devices are guaranteed for one year against failure due to defective workmanship or materials. All other components are guaranteed for two years.

FEATURES — 440 MHz Model D1010R

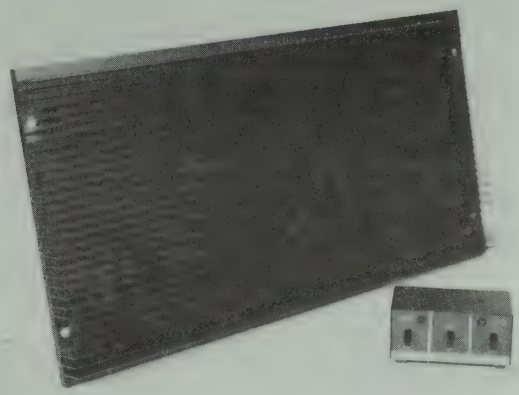
Cool Running—A 10" high by 19" wide full-finned rack-mounted heatsink keeps the transistor temperatures low for long life. The chassis cover is perforated so air convection will keep the circuit board area cool. The RF board is low loss Teflon for minimum dielectric heating.

Reliable—The RF change-over relay has been eliminated on this model to provide the highest order of reliability. Teflon connectors are standard on this well-designed unit.

Protection—The amplifier will shut off if conditions cause the heatsink temperature to rise to an unsafe level.

All-Mode Operation—Class AB linear operation is rated for FM, SSB, CW and ATV operation. *(440–450 MHz Standard Range, 420–430 MHz or 430–440 MHz are special order).*

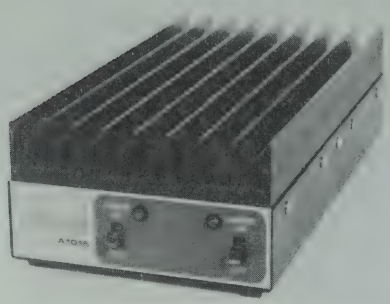
Warranty—RF power devices are guaranteed for one year against failure due to defective materials or workmanship. All other components are guaranteed for two years.



Mirage Repeater Amplifier Models

MHz Freq. Range	Model Number	Watts Power Input for	Watts Max. Cont. Output	Amps Nominal Current	Power Supply (VDC)	RF Connector
145–148	B215R	¾ – 1	110	16–18	13.8	Teflon SO-239
145–148	B1016R	3 – 4	120	16–18	13.8	Teflon SO-239
145–148	B3016R	10 – 12	120	14–15	13.8	Teflon SO-239
223–225	C211R	.3 – .6	80	15–16	13.8	Teflon SO-239
223–225	C1012R	4 – 5	90	15–16	13.8	Teflon SO-239
223–225	C3012R	13 – 15	90	13–14	13.8	Teflon SO-239
440–450	D1010RN	2 – 4	80	14–15	13.8	Teflon "N" UG58 A/U

A1015 — 6 Meter Amplifier
10W In – 150W Out



FEATURES

- Built-in Receive Preamp
- Remote Keying
- Remote Control Capabilities
- 10 Watts In – 150 Watts Out
- All-mode Operation (SSB, CW or FM)
- Built-in Thermal Protection

SPECIFICATIONS

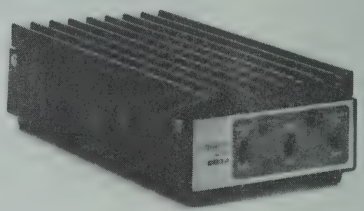
- Frequency Range ... 50 to 52 MHz
- RF Power In ..... 0.5 to 15 Watts
- RF Power Out ..... 150 Watts (10 Watts In)
- Modes ..... SSB, FM and CW
- Receive Preamp ..... 10 db Gain, 1.5 db Noise Figure
- DC Power ..... 13.6 VDC 20–25 Amps
- Size ..... 12″ × 3″ × 5½″
- Weight ..... 5 lbs.

- **Warranty** ..... **5 years** (1 year RF Power Trans.)

B23A — 2 Meter Amplifier
2W In – 30W Out

FEATURES

- Compact Size
- Built-in Receive Preamp
- All-mode SSB, FM and CW
- Complete Front Panel Switching
- Automatic Antenna Changeover
- 2 Watts In – 30 Watts Out

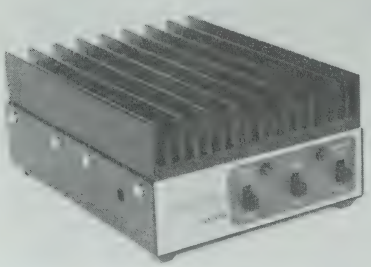


SPECIFICATIONS

- Frequency Range ..... 144 to 148 MHz
- RF Power In ... 200 mw to 5 Watts
- RF Power Out ..... 30 Watts (2 In – 30 Out)
- Modes ..... SSB, FM and CW
- Receive Preamp ..10 db Gain Min. –2.0 db ± 0.5 db Noise Figure
- DC Power ..... 13.6 VDC 5 Amps
- Size ..... 3½″ × 2″ × 7″
- Weight ..... 1¼ lbs.

- **Warranty** ..... **5 years** (1 year RF Power Trans.)

B108 — 2 Meter Amplifier
10W In – 80W Out



DUAL PURPOSE—
H.T.s or Transceivers

FEATURES

- Built-in Receive Preamp
- Adjustable Delay for SSB
- Remote Control Operation with Optional RC-1 Remote Head
- 1 to 2 Watts In – 15 to 30 Watts Out —Excellent for H.T.s
- Automatic Internal or External Relay Keying

SPECIFICATIONS

- Frequency Range ..... 144 to 148 MHz
- RF Power In .. 200 mw to 15 Watts
- RF Power Out ..... 80 Watts Nom. (20 In – 80 Out)
- Modes ..... SSB, FM and CW
- Receive Preamp ..10 db Gain Min. –2.0 db ± 0.5 db Noise Figure
- DC Power ..... 13.6 VDC 10–12 Amps
- Size ..... 8″ × 3″ × 5½″
- Weight ..... 3 lbs

- **Warranty** ..... **5 years** (1 year RF Power Trans.)

B215 — 2 Meter Amplifier
2W In – 150W Out

FEATURES

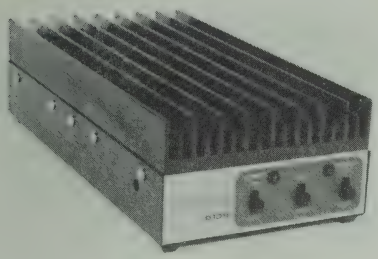
- Designed for H.T.s
- Variable SSB Delay
- Remote Keying
- Built-in Receive Preamp
- Remote Control Capabilities
- FM and SSB Mode Operation
- Built-in Thermal Protection

SPECIFICATIONS

- Frequency Range ..... 144 to 148 MHz
- RF Power In ... 200 mw to 5 Watts
- RF Power Out ..... 150 Watts (2 In – 150 Out)
- Modes ..... SSB, FM and CW
- Receive Preamp ..10 db Gain with 2.0 db ± 0.5 db Noise Figure
- DC Power ..... 13.6 VDC 5 Amps
- Size ..... 12″ × 3″ × 5½″
- Weight ..... 5 lbs.

- **Warranty** ..... **5 years**
(1 year RF Power Trans.)

B1016 — 2 Meter Amplifier
10W In – 160W Out



DUAL PURPOSE—
H.T.s or Transceivers

FEATURES

- Built-in Receive Preamp
- Adjustable Relay Delay for SSB
- Remote Control Operation with Optional RC-1 Remote Head
- Automatic Internal or External Relay Keying
- 1 to 2 Watts In Will Give 30 to 60 Watts Out

SPECIFICATIONS

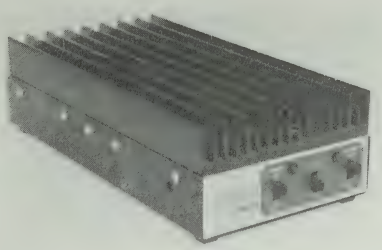
- Frequency Range ..... 144 to 148 MHz
- RF Power In .. 200 mw to 15 Watts
- RF Power Out .... 160 Watts Nom. (10 In – 160 Out)
- Modes ..... SSB, FM and CW
- Receive Preamp ..10 db Gain Min. –2.0 db ± 0.5 db Noise Figure
- DC Power ..... 13.6 VDC 20–25 Amps
- Duty Cycle ..... Intermittent— Internal Overtemperature Protection
- Size ..... 12″ × 3″ × 5½″
- Weight ..... 5 lbs.

- **Warranty** ..... **5 years**
(1 year RF Power Trans.)

B3016 — 2 Meter Amplifier
30W In – 160W Out

FEATURES

- Built-in Receive Preamp
- Adjustable Relay Delay for SSB
- Remote Control Operation with Optional RC-1 Remote Head
- Automatic Internal or External Relay Keying

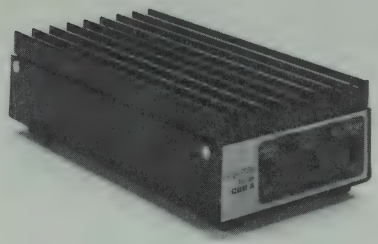


SPECIFICATIONS

- Frequency Range ..... 144 to 148 MHz
- RF Power In .. 200 mw to 45 Watts
- RF Power Out .... 160 Watts Nom. (30 In – 160 Out)
- Modes ..... SSB, FM and CW
- Receive Preamp ..10 db Gain Min. –1.0 db ± 0.5 db Noise Figure
- DC Power ..... 13.6 VDC 17–22 Amp
- Duty Cycle ..... Intermittent— Internal Overtemperature Protection
- Size ..... 12″ × 3″ × 5½″
- Weight ..... 5 lbs.

- **Warranty** ..... **5 years**
(1 year RF Power Trans.)

C22A — 1¼ Meter Amplifier
2W In – 20W Out



FEATURES

- Built-in Receive Preamp
- Variable Delay Switch
- All-mode SSB, FM and CW
- Compact Size
- Automatic Antenna Changeover
- 2 Watts In – 20 Watts Out

SPECIFICATIONS

- Frequency Range ..... 220 to 225 MHz
- RF Power In ... 200 mw to 5 Watts
- RF Power Out ..... 30 Watts (2 In – 20 Out)
- Modes ..... SSB, FM and CW
- Receive Preamp .....10 db Gain 2.0 db ± 0.5 db Noise Figure
- DC Power ..... 13.6 VDC 5 Amps
- Size ..... 3½" × 2" × 7"
- Weight.....1¼ lbs.

- **Warranty**..... **5 years** (1 year RF Power Trans.)

C106 — 1¼ Meter Amplifier
10W In – 60W Out

FEATURES

- Built-in Receive Preamp
- Adjustable Delay for SSB
- Remote Control Operation with Optional RC-1 Remote Head
- 1 to 2 Watts In — 11 to 23 Watts Out — Excellent for H.T.s
- Automatic Internal or External Relay Keying

SPECIFICATIONS

- Frequency Range ..... 220 to 225 MHz
- RF Power In ..... 300 mw to 15 Watts
- RF Power Out ..... 60 Watts Nom. (10 In – 60 Out)
- Modes ..... SSB, FM and CW
- Receive Preamp ..10 db Gain Min. -2.0 db ± 0.5 db Noise Figure
- DC Power ..... 13.6 VDC 10–12 Amps
- Size ..... 8" × 3" × 5½"
- Weight..... 3 lbs.

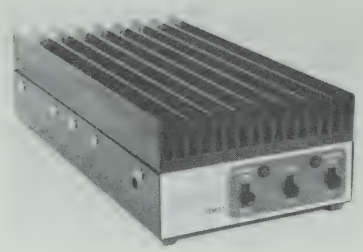
- **Warranty** **5 years** (1 year RF Power Trans.)

DUAL PURPOSE—
H.T.s or Transceivers

C211 — 1¼ Meter Amplifier
2W In – 110W Out

FEATURES

- Designed for H.T.s
- Built-in Receive Preamp
- Adjustable Delay for SSB
- Optional Remote Control Operation
- Automatic Internal or External Relay Keying



SPECIFICATIONS

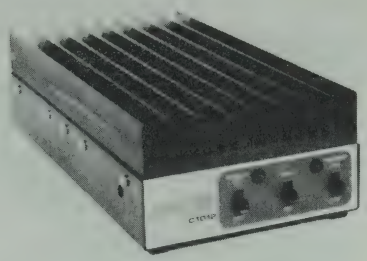
- Frequency Range ..... 220 to 225 MHz
- RF Power In ..... 300 mw to 4 Watts
- RF Power Out .... 110 Watts Nom. (2 In – 110 Out)
- Modes ..... SSB, FM and CW
- Receive Preamp ..10 db Gain Min. -2.0 db ± 0.5 db Noise Figure
- DC Power ..... 13.6 VDC 18–20 Amps
- Size ..... 12" × 3" × 5½"
- Weight..... 5 lbs.

- **Warranty**..... **5 years** (1 year RF Power Trans.)

C1012 — 1¼ Meter Amplifier
10W In – 120W Out

FEATURES

- Built-in Receive Preamp
- Adjustable Delay for SSB
- Optional Remote Control Operation
- 1 Watt In — 15 Watts Out
- Automatic Internal or External Relay Keying



SPECIFICATIONS

- Frequency Range ..... 220 to 225 MHz
- RF Power In .. 300 mw to 15 Watts
- RF Power Out .... 120 Watts Nom. (10 In – 120 Out)
- Modes ..... SSB, FM and CW
- Receive Preamp .....10 db Gain 2.0 db ± 0.5 db Noise Figure
- DC Power ..... 13.6 VDC 18–20 Amps
- Size ..... 12" × 3" × 5½"
- Weight ..... 5 lbs.

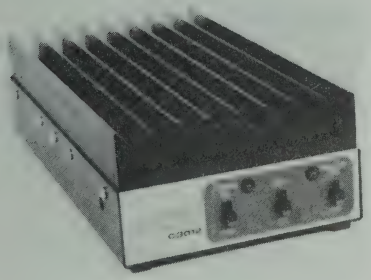
- **Warranty** ..... **5 years** (1 year RF Power Trans.)

DUAL PURPOSE—
H.T.s or Transceivers

C3012 — 1¼ Meter Amplifier
30W In – 120W Out

FEATURES

- Built-in Receive Preamp
- Adjustable Delay for SSB
- Optional Remote Control Operation
- Automatic Internal or External Relay Keying



SPECIFICATIONS

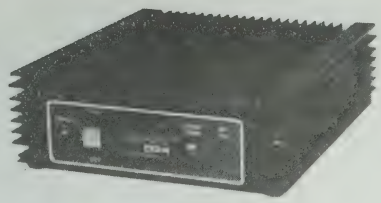
- Frequency Range ..... 220 to 225 MHz
- RF Power In .....5W to 45W (45W Max.)
- RF Power Out .....120W Nom. (30 In – 120 Out)
- Modes ..... SSB, FM and CW
- Receive Preamp .....10 db Gain 2 db ± 0.5 db Noise Figure
- DC Power ..... 13.6 VDC 18–20 Amps
- Size ..... 12" × 3" × 5½"
- Weight ..... 5 lbs.

- **Warranty** ..... **5 years** (1 year RF Power Trans.)

D24 — 430–450 MHz Amplifier
2W In – 40W Out

FEATURES

- All-mode FM, SSB, CW and ATV
- Adjustable Delay for SSB
- 1 Watt In Will Give 30 Watts Out



SPECIFICATIONS

- Frequency Range ..... 430 to 450 MHz
- RF Power In ..... Input 400 mw to 4 Watts (4 Watts max.)
- RF Power Out .....40+ Watts (2 In – 40 Out)
- Modes .....FM, SSB, CW and ATV
- DC Power ..... 13.6 VDC at 12 Amps Nominal
- Fuse .....15 Amps
- Impedance ... 50 Ohms Input and Output
- Duty Cycle .....Intermittent— Internal Overtemperature Protection
- Size .....7½" × 2⅜" × 7"
- Weight ..... 4 lbs.

- **Warranty** ..... **5 years** (1 year RF Power Trans.)

SPECIAL ORDER:
D24-N with
"N" Type Connectors

D1010 — 430–450 MHz Amplifier

10W In – 100W Out

FEATURES

- All-mode FM, SSB, CW, ATV
- Adjustable Delay for SSB
- Remote Control Operation with Optional RC-1 Remote Head
- 2 Watts In Will Give 25 Watts Out

SPECIFICATIONS

- Frequency Range ..... 430 to 450 MHz
- RF Power In ..... Input 300 mw to 15 Watts (15 Watts max.)
- RF Power Out .....100+ Watts (10 In–100 Out)
- Modes .....FM, SSB, CW, ATV
- DC Power ..... 13.6 VDC at 20 Amps Nominal
- Fuse .....35 Amp (Internally Mounted)
- Impedance .....50 Ohm Input and Output
- Duty Cycle .....Intermittent—Internal Overtemperature Protection
- Size ..... 12″ × 3″ × 5½″
- Weight..... 5 lbs.
- **Warranty**..... **5 years** (1 year RF Power Trans.)

SPECIAL ORDER:
D1010-N with
Type "N" Connectors

Barry (Jan) 270.00

D3010 — 430–450 MHz Amplifier

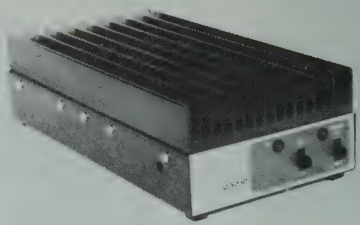
30W In – 100W Out

FEATURES

- All-mode FM, SSB, CW, ATV
- Adjustable Delay for SSB
- Remote Control Operation with Optional RC-1 Remote Head
- Hi-Power Input

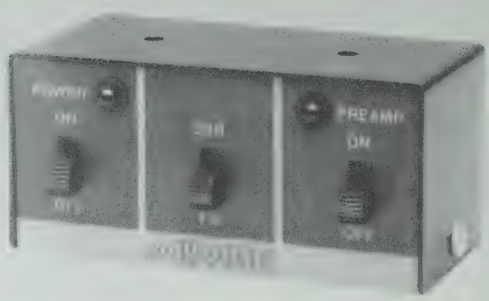
SPECIFICATIONS

- Frequency Range ..... 430 to 450 MHz
- RF Power In .....5W to 45W (45 Watts max.)
- RF Power Out .....100+ Watts (30 In – 100 Out)
- Modes .....FM, SSB, CW, ATV
- DC Power ..... 13.6 VDC at 20 Amps nominal
- Fuse .....35 Amp (Internally Mounted)
- Impedance .....50 Ohm Input and Output
- Duty Cycle .....Intermittent—Internal Overtemperature Protection
- Size ..... 12″ × 3″ × 5½″
- Weight..... 5 lbs.
- **Warranty**..... **5 years** (1 year RF Power Trans.)



SPECIAL ORDER:
D3010-N with
Type "N" Connectors

RC1 — Amplifier Remote Control



FEATURES

- For Remote Control of all MIRAGE Amplifiers except B23A, C22A and D24.
- Small Size for Convenient Mounting
- Same Attractive Styling as all MIRAGE Products
- Allows for Trunk or Under Seat Mounting of Amplifiers

SPECIFICATIONS

- Functions.....Duplicates All Switches on Amplifiers
- Size ..... 1¾″ × 3¾″ × 2½″
- Cable ..... 18′, 6-Wire Cable Complete with Connectors

516-483-5452

Jamy

D3010-

30 Dr - 100W

$ 270.00

P.E Power amp w Gas Fet

$329

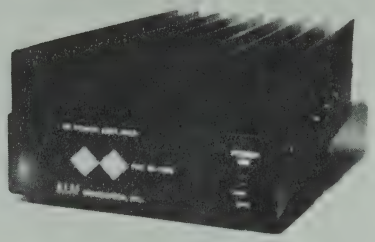
1-500- 200-500

COMMERCIAL COMMUNICATIONS

RF Power Amplifiers

PAC 30-130B

150–174 MHz × 6 MHz



FEATURES

- Automatic RF-sensed Operation
- Remote Control Jack

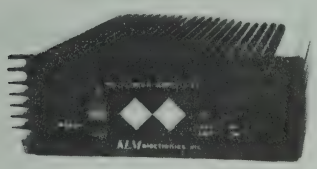
SPECIFICATIONS

- Power Out ..... 130 Watts nominal with 30 Watts of drive
- Power In ..... 10 to 45 Watts
- Frequency Coverage ... 150 to 174 MHz, any 6 MHz
- VSWR ..... Less than 1.5:1. Any 6 MHz bandwidth less than 1.5:1 in bypass mode
- Impedance .... 50 Ohms, nominal
- Supply Voltage ..... 13.6 VDC nominal (11–16 VDC)
- Supply Current .... 18 Amps nom.
- Connectors ..... RF-SO-239, RCA phono jack (remote control)
- Protection Circuitry ..... Internal 35 Amp fuse, and over-temp. sensor—170°F
- Size ..... 12″ × 3″ × 5½″
- Weight ..... 5 lbs.
- Operating Class ..... Class C, FM and CW only

10W In = 50W Out
15W In = 80W Out
20W In = 180W Out
30W In = 130W Out

PAC 15-100C

450–470 MHz



1W In = 44W Out
2W In = 76W Out
4W In = 100W Out
15W In = 100W Out

FEATURES

- Over-temp Sensing that Bypasses Amp when Safe Operating Temperatures are Exceeded
- Heavy-duty Heatsink, Finned on 3 Sides

SPECIFICATIONS

- Power Out ..... 100 Watts at 10 Watts in
- Power In ..... ½ to 15 Watts
- Frequency Coverage ..... 450–470 MHz
- VSWR ..... Less than 1.5:1. 450–470 MHz or in bypass mode
- Impedance .... 50 Ohms, nominal
- Supply Voltage ..... 13.5 VDC nominal (11–16 VDC)
- Supply Current .... 20 Amps nom.
- Connectors ..... SO-239, RCA phono jack (remote control)
- Size ..... 2.375″H × 7″W × 10″D
- Service ..... FM, multi-purpose

PAC 10-70B

150–174 MHz × 4 MHz

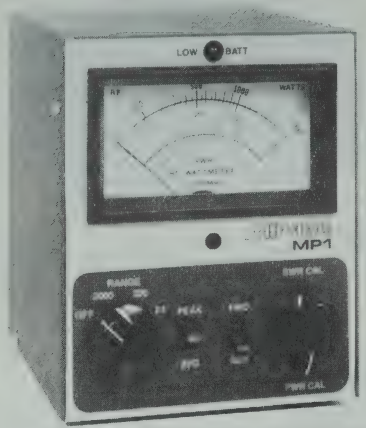
SPECIFICATIONS

- Power Out ..... 70 Watts at 10 Watts in
- Power In ..... ½ to 15 Watts
- Frequency Coverage ..... Any 4 MHz, 150–174 MHz
- VSWR ..... Less than 1.5:1. Over 4 MHz or in bypass mode
- Impedance .... 50 Ohms, nominal
- Supply Voltage ..... 13.5 VDC nominal (11–16 VDC)
- Supply Current .. 8 Amps nominal (7–10A)
- Connectors ..... SO-239, RCA phono jack (remote control)
- Service ..... FM, multi-purpose

2W In = 14W Out
3W In = 25W Out
5W In = 40W Out
10W In = 70W Out

Watt/SWR Meters

MP1 HF Peak Reading Wattmeter



FEATURES

- 1.8 to 30 MHz
- Peak or Average Reading
- Reads SWR Directly—Without Extra Charts or Graphs
- Remote Coupler Mounting
- High Quality Meter Movement

SPECIFICATIONS

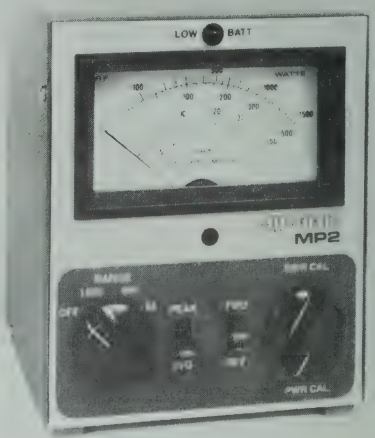
- Frequency Range ... 1.8 to 30 MHz
- Power Ranges ..... 25, 200 and 2000 Watts (±5% ± 1% meter)
- SWR Sensitivity ..... 1 or 2 Watts
- Functions .....Power—forward/ reverse, peak/average and SWR
- Line Impedance .....50 Ohms resistive
- Power Requirements ..... 9 VDC internal battery and AC adaptor jack
- Size .....5.75" × 4.5" × 5.75"
- Weight .....3.5 lbs.

- **Warranty** ..... **5 years** (parts and labor)

MP2 VHF Peak Reading Wattmeter

FEATURES

- 50 to 200 MHz
- Peak or Average Reading
- Reads SWR Directly—Without Extra Charts or Graphs
- Remote Coupler Mounting
- High Quality Meter Movement



SPECIFICATIONS

- Frequency Range .. 50 to 200 MHz
- Power Ranges ..... 50, 500 and 1500 Watts (+5% ± 1% meter)
- SWR Sensitivity ..... 1 or 2 Watts
- Functions .....Power—forward/ reverse, peak/average and SWR
- Line Impedance .....50 Ohms resistive
- Power Requirements ..... 9 VDC internal battery and AC adaptor jack
- Size .....5.75" × 4.5" × 5.75"
- Weight .....3.5 lbs.

- **Warranty** ..... **5 years** (parts and labor)

HOW MIRAGE/KLM RATES GAIN

"Gain" figures for all Mirage/KLM antennas use the standard half-wave dipole reference ("dBd") and indicate usable gain that is normally near-constant across the rated frequency coverage. "Typ" (typical) indicates an averaged figure used only with extremely broadband models such as the C10-30-7LP.

Add 2.1 dB to dipole gain when comparing to isotropic gain (dBi) used as reference by some manufacturers. Be suspicious of gain claims where no reference is given (dB). Sometimes theoretical "ground gain" of 6 dB has been added to enhance basically poor numbers.

An Antenna Length Chart

By George I. Wagner,* K5KG

In the past few years I have had several opportunities to operate from a number of DX locations. In doing so, I have learned the importance of taking along the proper collection of tools, connectors, gadgets, and reference information to be able to make a quick repair or string up a needed antenna in an unfamiliar shack. Conversely, I have also learned the agony of lugging too much along, only to find it completely unnecessary and unused at the end of the trip.

The antenna length chart, which is the subject of this article, arose out of the need to have a convenient and ready reference, other than a weighty handbook, for measuring antenna lengths. This results from a number of experiences in trying to find a calculator, or a paper and pencil (typically in the dark and late at night), inevitable debates over what constants to use in the calculations, and finally the need to convert from feet to meters when only a meter tape was available, or vice versa. On two separate occasions I have discovered 160 meter dipoles of totally wrong lengths, and on an expedition to OJ0 in 1982, OH0RF and I spent many hours calculating, cutting, and erecting 40 and 15 meter delta loops. This chart would have been a valuable asset in those circumstances.

This chart was developed after a brief reference to the various antenna handbooks in the shack, and a quick refresher on the current amateur frequencies, especially in the new 12, 15, and 30 meter WARC bands. The formulas used in the calculations, shown at the bottom of the chart, are based upon standard assumptions for wire antennas supported by end insulators.

The chart was developed using VisiCalc (a registered trademark of VisiCorp), an electronic "spreadsheet" program on an Apple II+ computer. However, any spreadsheet program on a personal computer could have been used to do the job.

ANTENNA LENGTH CHART BY K5KG

Frequency (MHz)	Wavelength - Feet				Wavelength - Meters			
	1/4	1/2	1/2 + 5%	Full	1/4	1/2	1/2 + 5%	Full
1.8	129.87	259.75	272.73	519.49	39.58	79.17	83.12	158.33
1.825	128.09	256.19	269.00	512.38	39.04	78.08	81.99	156.16
1.85	126.36	252.73	265.36	505.45	38.51	77.03	80.88	154.05
1.9	123.04	246.08	258.38	492.15	37.50	75.00	78.75	150.00
3.5	66.79	133.58	140.26	267.17	20.36	40.71	42.75	81.43
3.6	64.94	129.87	136.37	259.75	19.79	39.58	41.56	79.17
3.7	63.18	126.36	132.68	252.73	19.26	38.51	40.44	77.03
3.8	61.52	123.04	129.19	246.08	18.75	37.50	39.38	75.00
3.9	59.94	119.88	125.88	239.77	18.27	36.54	38.37	73.08
4	58.44	116.89	122.73	233.77	17.81	35.63	37.41	71.25
7	33.40	66.79	70.13	133.58	10.18	20.36	21.37	40.71
7.05	33.16	66.32	69.63	132.64	10.11	20.21	21.22	40.43
7.1	32.93	65.85	69.14	131.70	10.04	20.07	21.07	40.14
7.2	32.47	64.94	68.18	129.87	9.90	19.79	20.78	39.58
7.3	32.02	64.05	67.25	128.09	9.76	19.52	20.50	39.04
10	23.38	46.75	49.09	93.51	7.13	14.25	14.96	28.50
10.5	22.26	44.53	46.75	89.06	6.79	13.57	14.25	27.14
14	16.70	33.40	35.07	66.79	5.09	10.18	10.69	20.36
14.1	16.58	33.16	34.82	66.32	5.05	10.11	10.61	20.21
14.2	16.46	32.93	34.57	65.85	5.02	10.04	10.54	20.07
14.35	16.29	32.58	34.21	65.16	4.97	9.93	10.43	19.86
18	12.99	25.97	27.27	51.95	3.96	7.92	8.31	15.83
18.5	12.64	25.27	26.54	50.55	3.85	7.70	8.09	15.41
21	11.13	22.26	23.38	44.53	3.39	6.79	7.12	13.57
21.1	11.08	22.16	23.27	44.32	3.38	6.75	7.09	13.51
21.25	11.00	22.00	23.10	44.00	3.35	6.71	7.04	13.41
21.45	10.90	21.80	22.89	43.59	3.32	6.64	6.98	13.29
24.89	9.39	18.78	19.72	37.57	2.86	5.73	6.01	11.45
24.93	9.38	18.75	19.69	37.51	2.86	5.72	6.00	11.43
24.99	9.35	18.71	19.64	37.42	2.85	5.70	5.99	11.40
28	8.35	16.70	17.53	33.40	2.54	5.09	5.34	10.18
28.5	8.20	16.41	17.23	32.81	2.50	5.00	5.25	10.00
29	8.06	16.12	16.93	32.24	2.46	4.91	5.16	9.83

Formulas Used: 1 Meter = 3.281 Feet

Length of 1/2 Wavelength Antenna (Meters) =
(300 × .95 × .5)/Freq. (MHz) = 142.50/Freq. (MHz)

Length of 1/2 Wavelength Antenna (Feet) =
(300 × .95 × .5 × 3.81 m/ft)/Freq. (MHz) = 467.54/Freq. (MHz)

***Note:** 1/2 Wavelength × 5% is Used for Inverted Vee Antennas*

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*P.O. Box 4312, Houston, TX 77001

Moonbouncers

Introducing New Ultra High Performance Antennas

Mirage/KLM Electronics is fueling the **Moonbounce** and Oscar 10 revolution with antenna equipment that delivers truly Out-of-This-World performance.

For the **Moonbouncer**, our new 2M-16LBX is designed to be the highest gain 2-meter antenna available on the market today by more than a full db, making the 2M-16LBX an outstanding performer as a single antenna or in **Moonbounce** (EME) arrays.

The new 432-30LBX follows the same pattern as the 2M-16LBX, and soon will become the industry's standard of comparison.

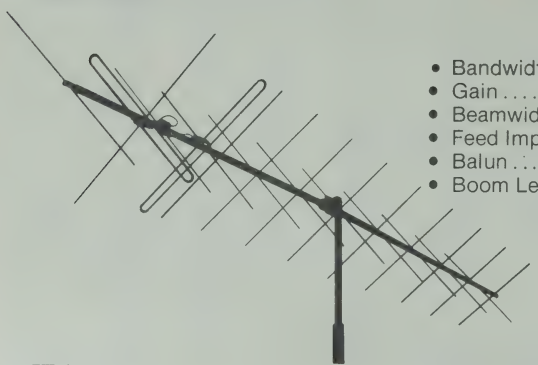
Featuring straightforward construction, and an innovative tapered boom that greatly reduces windload and adds strength and durability. Virtually unbreakable, insulated, 3/16" rod parasitic elements are anchored through the boom to ensure years of trouble-free performance.

For the satellite enthusiasts, the 2M-22C high gain, 2-meter, circular polarized antenna features the same rugged construction and total flexibility as our very popular 2M-14C with a 2 db increase in gain.

Four or more 2M-22Cs make an excellent array for **Moonbounce** (EME) by eliminating Faraday fading.

Fiberglass/aluminum stacking frames are available as well as 2- and 4-port power dividers and phasing harnesses to optimize the performance of these type arrays. Watch for our new elevation drive system coming soon.

2M-22C



SPECIFICATIONS

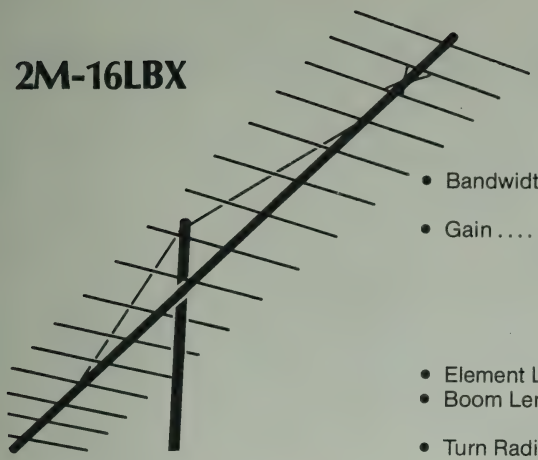
- Bandwidth ..... 430–440 MHz
- Gain ..... 17.3 dBd
- Beamwidth ..... 20°
- Feed Imp ..... 50 Ohms unbal.
- Balun ..... included
- Boom Length ..... 21 ft., 9 in.
- F/B ..... 20 dB
- F/S ..... 35 dB
- VSWR 1.5:1
- Windload ..... 1.43 sq. ft. (typical)
- Turning Radius ..... 12 ft,, 5 in.
- Weight ..... 9 lbs.

432-30LBX

SPECIFICATIONS

- Bandwidth ..... 144–148 MHz
- Gain ..... 13 dBdC
- Beamwidth ..... 34°
- Feed Imp ..... 50 Ohms unbal.
- Balun ..... (2) 4:1 coax
- Boom Length ..... 19 ft., 1 in. (tapered)
- VSWR 1.5:1
- Windload ..... 1.85 sq. ft.
- Ellipticity ..... 3 dB max.
- Circularity Switcher ..... CS-3 included
- Weight ..... 11 lbs.

2M-16LBX



SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... Spec. 144–146
  Usable 143–148
- Gain 144–14.5
  145–14.5 – – 146–14.4
  147–14.3 — 148–13.2
- VSWR 1.2:1
- Beamwidth ..... E = 26°, H = 29°
- Feed Imp ..... 50 Ohms, unbal.
- Balun .....4:1, 2 kW Coax

MECHANICAL

- Element Length ..... 40⅝ in. max.
- Boom Length .....28 ft.
  (4.1 wavelengths)
- Turn Radius..... 15 ft., 5 in.
- Windload ..... 2.44 sq. ft.
- Weight..... 10 lbs.
- Mast ..... 2⅛ in. max.

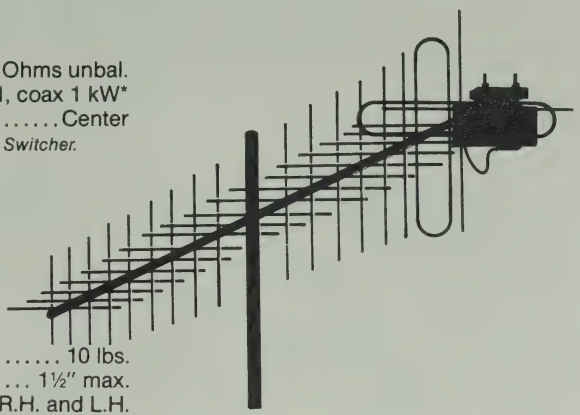
435-40CX

SPECIFICATIONS

ELECTRICAL

- Bandwidth ....Spec. 420–440 MHz
  Usable 410–450 MHz
- Gain ..... 15.2 dBdC at 436 MHz
- VSWR 1.5:1
- Beamwidth ..... 25°
- Feed Imp .....50 Ohms unbal.
- Balun ..... 4:1, coax 1 kW*
- Mount .....Center

**250W max. when using CS-2 Switcher. (Supplied)*



MECHANICAL

- Element Length ....13.625 in. max.
- Boom Length ..... 175.5 in.
- Turn Radius..... 105 in.
- Windload ..... 1.16 sq. ft.
- Weight..... 10 lbs.
- Mast..... 1½" max.
- Polarity .... Circular R.H. and L.H.
  switchable using CS-2

EL 3000 Moontracker Elevation System

Mirage/KLM continues to fuel the **Moonbounce** revolution with the new **EL 3000 Moontracker** elevation system.

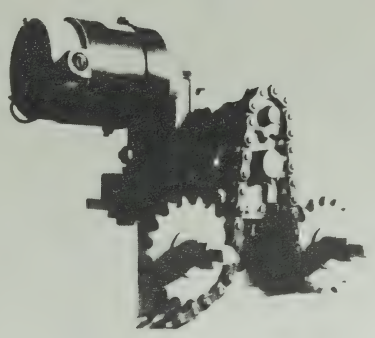
Mirage/KLM's long experience in satellite tracking antenna systems makes this unique product possible. Rugged, all-steel construction combined with clever adaptation of the well-proven tangential drive design has produced a truly versatile elevation system.

The **EL 3000** utilizes rugged, zinc-plated steel construction with a powerful 28 VDC motor/gear drive at its heart. Chain drive is applied to the tangential drive ring which rotates the main array support boom. A high linearity 10-turn pot ensures antenna position feedback to the control console. Digital readout provides 1° accuracy. The dual-speed controls allows for rapid initial alignment, then slow accurate tracking. In addition, the system uses voltages that are computer compatible for interface to auto-tracking systems.

The **EL 3000** mounts directly on a 2-or 3-inch diameter mast or adapts easily to almost any other mounting requirement. For array maintenance or other uses—properly mounted—the **Moontracker** is capable of 180° rotation.

The **EL 3000** has been carefully designed and is strong enough to elevate most VHF-UHF arrays. If you are considering **Moonbounce** now, or if you are thinking of enlarging or improving your current system, let the **EL 3000 Moontracker** simplify your life.

Available through your local Mirage/KLM dealer. Talk to him about a package deal on a complete system of Mirage/KLM products for your **Moonbounce** system.



DRIVE DETAIL

TRIBANDERS

The KT-34 and KT-34XA have become pacesetters for tribander performance. The four-element KT-34A offers an unusually compact solution for a three-band high performance installation. The six-element KT-34XA has been designed to outperform all commercially available tribanders and many monobanders as well. The high performance of these tribanders results from their innovative construction. Traps, coils, and capacitors found on conventional tribanders are replaced by lossless linear loading and high-Q air capacitors constructed of aluminum tubing. These techniques coupled with Mirage/KLM's unique dual-driven element system allow broadband performance with high gain and low VSWR remaining nearly constant across the three bands. The KT-34A can be upgraded to the KT-34XA at any time.

The boom length of the KT-34XA is doubled, and one tri-resonant and one full-size 10-meter element is added. These changes increase the gain to 11–11.3 dBd on 10M, 9–9.5 dBd on 15M, and 8.5–9 dBd on 20M.

Structurally, the KT-34A is built tough. All the aluminum, including the boom, is strong weather-resistant 6063-T832 alloy. All the hardware is stainless steel except for the mounting U-bolts. Virtually indestructible Lexan insulators support the elements and insulate them from the boom. Rotation is possible by most any ham rotor. Wind balance and wind survival are excellent.

KT-34A

SPECIFICATIONS

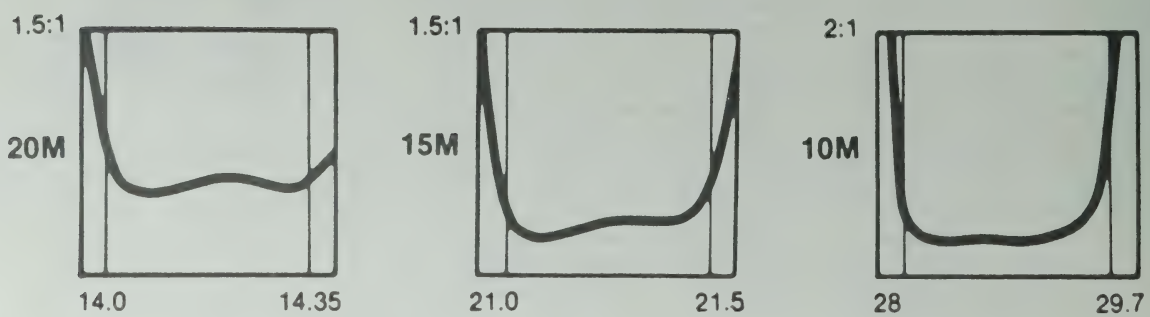
ELECTRICAL

- Bandwidth ..... 14.0–14.350 MHz
  21.0–21.450 MHz
  28–29.7 MHz
- Gain ..... 7 dBd ± 0.3 dB
- VSWR 1.5:1
- F/B ..... 20 dB
- F/S ..... 30 dB
- Feed Imp .... 50 Ohms with balun
- Balun ..... 4:1, 5kW PEP

MECHANICAL

- Element Length ..... 24 ft.
- Boom Length ..... 16 ft.
- Turn Radius ..... 16 ft.
- Windload ..... 6 sq. ft.
- Weight ..... 45 lbs.
- Mast ..... 2 in. O.D.

KT34A vs. SWR



SPECIFICATIONS

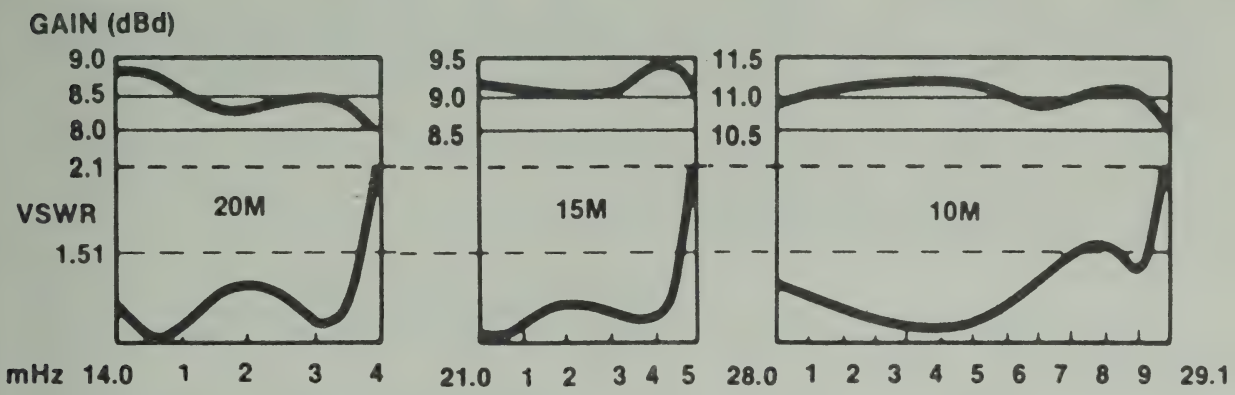
ELECTRICAL

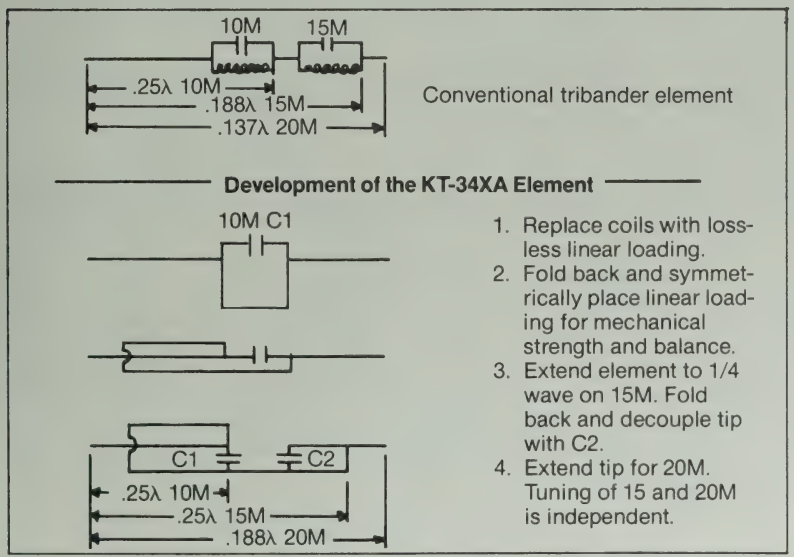
- Bandwidth ..... 14.0–14.350 MHz
  21.0–21.450 MHz
  28–29.1 MHz
- Gain ..... 8.5–9 dB
  9–9.5 dB
  11–11.3 dB
- VSWR 1.5:1
- F/B ..... 20 dB
- F/S ..... 40 dB
- Feed Imp .... 50 Ohms with balun
- Balun ..... 4:1, 5 kW PEP

MECHANICAL

- Element Length ..... 24 ft.
- Boom Length ..... 32 ft.
- Turn Radius ..... 21.5 ft.
- Windload ..... 9 sq. ft.
- Weight ..... 68 lbs.
- Mast ..... 2 in. O.D.

KT-34XA Gain vs. VSWR




10M
15M
.25λ 10M
.188λ 15M
.137λ 20M
Conventional tribander element
Development of the KT-34XA Element
10M C1
C1
C2
.25λ 10M
.25λ 15M
.188λ 20M
1. Replace coils with lossless linear loading.
2. Fold back and symmetrically place linear loading for mechanical strength and balance.
3. Extend element to 1/4 wave on 15M. Fold back and decouple tip with C2.
4. Extend tip for 20M. Tuning of 15 and 20M is independent.

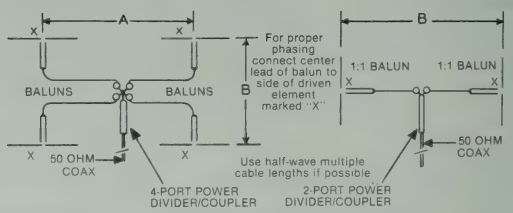
The KT-34XA's design represents the first major advancement in tribander technology in over 20 years! The conventional traps, coils, and capacitors have been discared in favor of integral linear loading and hi-Q air capacitors, all composed of aluminum tubing. These give the KT-34XA a conservative power handling capability of 4 kW PEP and an unusually high level of operating efficiency. Linear loading also makes full 1/4-wave elements possible on 10 and 15 meters, and brings 20 meters much closer to the desirable 1/4-wave than any conventional tribander. The sketch diagrams the profound differences between the KT-34XA and a typical tribander element and the electrical activity of its various sections.

Antenna Spacing 2- and 4-Bay Arrays

NOTE: For correct phasing of linear antennas, connect center lead of sleeve balun or dotted terminal of territe balun to side of driven elements marekd "X." For antennas using coaxial baluns, connect center conductor of feed coax to "X." Circular antennas must have feed points of vertical and horizontal elements oriented identically—not a mirror image.

Spacing Dimensions

Antenna	A (ft.)	B (ft.)
6M-7LD	16-18	14-16
6M-7LB	20-22	18-20
2M-11X	10-11	9-10
2M-13LBA	11.5-12	11-11.5
2M-14C	8-9	8-9
2M-16LBX	12.5-13	12-12.5
2M-22C	10-12	10-12
220-7	4	4
220-14X	8-9	7-8
220-22LBX	11.5	11.25
440-14	3-3.5	2.5-3
435-18C	3.5-4	3.5-4
432-20LBX	5-5.5	4.5-5
440-27	4.5-5	4-4.5
432-30LBX	66-72 inches	64-70 inches
435-40CX	4.5-5	4.5-5



For optimum performance and trouble-free operation of your VHF/UHF stacked array, Mirage/KLM makes the following recommendations:

1. Use quality coax of known 50 ohm impedance such as Times FM-8, Belden 8214, 9913, Columbia 1198, RG213, or RG214. Be wary of so-called "RG-8 type" foam coax, much of which is not 50 ohm impedance. Using bargain coax of unknown impedance and/or velocity factor defeats the purpose of stacked arrays—*i.e.*, higher gain and performance.
2. Coupler to balun cables should all be made THE SAME LENGTH (see Step 3).
3. For lowest VSWR, cable lengths should be multiples of one-half wavelength at the operating frequency. The table below shows correct half-wavelengths for several cable types for the VHF/UHF bands (see manufacturer's spec and table below).

$$\frac{5904}{\text{freq. in MHz}} \times \text{velocity factor} = \text{37A electrical half-wavelength of inches of coaxial cable.}$$

For example:

$$\frac{5904}{144\ \text{MHz}} \times .80\ (\text{Times FM-8}) = 32.80\ \text{inches}$$

(144 MHz half-wavelength in Times FM-8)

Typical 50 Ohm Coax Velocity Factor

Type Coax	Nominal Velocity
RG-8	.66
RG-213	.66
RG-214	.66
Belden 8214	.78
Times FM-8	.80
Belden 9913	.84

Multiply the resulting figure until cable lengths will comfortably reach from coupler to balun. Allow for gentle curves at boom/frame and frame/mast junctions. Avoid harsh bends. Again, make all harness cables the same length.

4. Use appropriate Mirage/KLM sleeve or ferrite balun at each antenna's feedpoints. Make sure all antennas in array are correctly phased. See sketch and note on Antenna Spacing page.

λ/2 Cable Lengths for Various Cables

Operating Frequency	Velocity Factor = .66 RG-8, RG-213, RG-214, RG-58	Velocity Factor = .78 Belden 8214	Velocity Factor = .80 Times FM8	Velocity Factor = .84 Belden 9913
50	77.92″	92.10″	94.46″	99.18″
52	74.92″	88.55″	90.82″	95.36″
144	27.05″	31.97″	32.79″	34.43″
146	26.68″	31.54″	32.34″	33.96″
220	17.70″	20.93″	21.46″	22.54″
223	17.47″	20.65″	21.17″	22.23″
430	9.06″	10.70″	10.98″	11.53″
440	8.85″	10.46″	10.73″	11.27″

ANTENNA STACKING QUESTIONS AND ANSWERS

Q: Can I stack a 40M-1 with a KT-34 or KT-34XA?
A: Yes, but the dipole must be placed in parallel with the tribander boom and spaced a minimum of four feet.

Q: How about stacking the 40M-2, 40M-3, or 40M-4 with the 34A or XA?
A: Again yes, but these larger antennas have correspondingly larger electrical fields and produce more prounounced capacitive detuning effects. Their separation from the tribander should be 8, 12, and 15 feet minimum. They should, of course, be mounted similarly to the 40M-1; *i.e.*, with the elements parallel to the tribander boom.

Q: I want to mount a VHF/UHF above my tribander (or HF monobander). How far above the HF antenna should I mount the UHF/VH antenna?
A: For SMALL (5–10 dB gain) VHF/UHF antennas, a minimum separation of one-half wavelength at the VHF/UHF frequency is required. For longer antennas, a full wavelength is recommended and a greater separation may be required.

Q: What is the best way to stack 10M, 15M, and 20M monobanders?
A: For the least interaction and best use of mast height, start with 16 feet of mast. Mount the 20M antenna at the bottom of the mast, the 10M in the middle, and the 15M at the top.

World Class Extra HF Antennas

Mirage/KLM's World Class Extra series of antennas are designed to satisfy the needs of the most serious DX operator. The 80M-3, 40M-4 and the 20M, 15M, 10M 6-element monobanders offer the ultimate in performance with no compromises. The electrical designs are based on achieving maximum gain, bandwidth, and front-to-back ratios. Construction materials and techniques were selected for maximum strength and durability.

For the 80M-2 and 80M-3, linear loading of #12 AWG copperweld wires is used to keep element lengths manageable and also provide overhead element support. All World Class Extra antennas are nonresonant, noncorroding Phyllystran cable for element and boom-support systems.

When your signal must stand out on the high-frequency bands, look to Mirage/KLM's World Class Extra series. They are the ultimate DX machines.

HF Monoband

Mirage/KLM high performance monobanders are the answer for quality installations where larger models are not practical or necessary. Moderate in size, they can be easily stacked with other beams without overloading the tower/rotor capabilities. Mirage/KLM monobanders offer many of the superb performance and construction features of the World Class Extra series. Mirage/KLM's dual-driven element system provides full performance and broadband coverage—in many cases across the entire amateur band! Matching problems are eliminated with the Mirage/KLM 3-60-4:1 and 1:1 baluns which are rated to 5 kW PEP, 6063-T823 aluminum alloy, massive Lexan insulators, and stainless steel hardware (except U-bolts) along with swedged boom sections assure years of trouble-free, consistent performance.

80 METERS

80M-3 World Class Extra

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 3.5–4.0 MHz × 90 kHz
- Gain ..... 7.0 dBd
- VSWR 1.5:1
- F/B ..... 18 db
- Feed Imp ..... 50 Ohms
- Balun ..... 1:1, Coax

MECHANICAL

- Element Length ..... 90 ft.
- Boom Length ..... 60 ft.
- Turn Radius ..... 54 ft.
- Windload ..... 30 sq. ft.
- Weight ..... 270 lbs.
- Mast ..... 2 in./3 in.

**Phone/CW Switching Option available at additional cost. Order 80M-3R*

80M-2

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 3.5–4.0 MHz × 80 kHz
- Gain ..... 4.0 dBd
- VSWR 1.5:1
- F/B ..... 12 db
- Feed Imp ..... 50 Ohms
- Balun ..... 1:1, Coax

MECHANICAL

- Element Length ..... 90 ft.
- Boom Length ..... 36 ft.
- Turn Radius ..... 48 ft.
- Windload ..... 20 sq. ft.
- Weight ..... 225 lbs.
- Mast ..... 2 in./3 in.

**Phone/CW Switching Option available at additional cost. Order 80M-2R*

80M-1 Dipole

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 3.5–4.0 MHz × 75 kHz
- Gain ..... 0 dBd
- VSWR 1.5
- Feed Imp ..... 50 Ohms
- Balun ..... 1:1, 5 KW

MECHANICAL

- Element Length ..... 90 ft.
- Turn Radius ..... 45 ft.
- Windload ..... 10 sq. ft.
- Weight ..... 90 lbs.
- Mast ..... 2 in./3 in.

40 METERS

40M-4 World Class

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 7.0–7.3 MHz × 260 kHz
- Gain ..... 7.2 dBd
- VSWR 1.5:1
- F/B ..... 20 db
- Feed Imp ..... 50 Ohms
- Balun ..... 4:1, 5 KW

MECHANICAL

- Element Length ..... 46 ft.
- Boom Length ..... 42 ft.
- Turn Radius ..... 32 ft.
- Windload ..... 12 sq. ft.
- Weight ..... 85 lbs.
- Mast ..... 2 in.

40M-3A World Class

SPECIFICATIONS

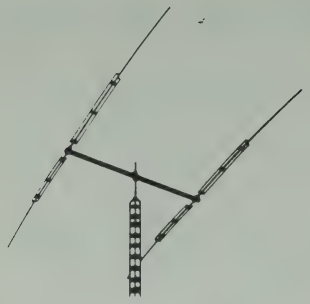
ELECTRICAL

- Bandwidth ..... 7.0–7.3 MHz × 200 kHz
- Gain ..... 6.5 dBd
- VSWR 1.5:1
- F/B ..... 20 db
- Feed Imp ..... 50 Ohms
- Balun ..... 1:1, Coax

MECHANICAL

- Element Length ..... 46 ft.
- Boom Length ..... 32 ft.
- Turn Radius ..... 28 ft.
- Windload ..... 10 sq. ft.
- Weight ..... 70 lbs.
- Mast ..... 2 in.

40M-2A



SPECIFICATIONS

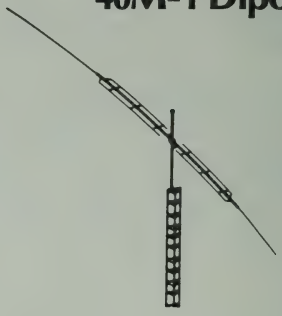
ELECTRICAL

- Bandwidth ..... 7.0–7.3 MHz × 125 kHz
- Gain ..... 4.9 dBd
- VSWR 1.5:1
- F/B ..... 12 db
- Feed Imp ..... 50 Ohms
- Balun ..... 1:1, Coax

MECHANICAL

- Element Length ..... 46 ft.
- Boom Length ..... 16 ft.
- Turn Radius ..... 25 ft.
- Windload ..... 6 sq. ft.
- Weight ..... 45 lbs.
- Mast ..... 2 in.

40M-1 Dipole



SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 7.0–7.3 MHz × 75 kHz
- Gain ..... 0 dBd
- VSWR 1.5:1
- Feed Imp ..... 50 Ohms
- Balun ..... 1:1, 5 kW

MECHANICAL

- Element Length ..... 46 ft., 6 in.
- Turn Radius ..... 23 ft.
- Windload ..... 2 sq. ft.
- Weight ..... 15 lbs.
- Mast ..... 2 in.

How Mirage/KLM Rates Bandwidth, Gain and VSWR:

Bandwidth figures for almost all Mirage/KLM antennas indicate the actual usable coverage without retuning, at the specified VSWR. With a tunable antenna like the JV2, the figures show the tuning range (144–148 MHz) followed by the operational coverage (× 2MHz) at the specified VSWR.

Gain figures for all Mirage/KLM antennas, except the verticals, use the standard half-wave dipole reference (dBd) and indicate usable gain that is normally near constant across the rated bandwidth. "TYP" (typical) indicates an average figure used only with extremely broadband models such as the 10-30-7LPA. Gain figures for the 2-meter, 1¼-meter and 70 cm lines have been carefully measured and correlated with National Bureau of Standards Technical Note No. 688. This publication describes an in-depth study of the relationship of boom length and gain. The Mirage/KLM gain figures may appear to be somewhat conservative when compared with other brands based on older, less exacting testing methods.

20 METERS

20M-6 World Class Extra

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 13.9–14.4 MHz
- Gain ..... 11 dBd
- VSWR 1.5:1
- F/B ..... 30 db
- Feed Imp ..... 50 Ohms
- Balun ..... 4:1, 5 kW

MECHANICAL

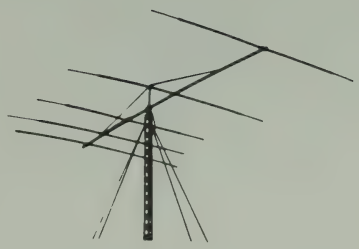
- Element Length ..... 37 ft.
- Boom Length ..... 57 ft.
- Turn Radius ..... 34 ft.
- Windload ..... 12.8 sq. ft.
- Weight ..... 95 lbs.
- Mast ..... 2 in.

20M-5

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 13.9–14.4 MHz
- Gain ..... 9.7 dBd
- VSWR 1.5:1
- F/B ..... 30 db max.
- Feed Imp ..... 50 Ohms
- Balun ..... 4:1, 5 kW



MECHANICAL

- Element Length ..... 37 ft.
- Boom Length ..... 42 ft.
- Turn Radius ..... 28 ft.
- Windload ..... 9.3 sq. ft.
- Weight ..... 65 lbs.
- Mast ..... 2 in.

20M-4

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 13.9–14.4 MHz
- Gain ..... 7.7 dBd
- VSWR 1.5:1
- F/B ..... 25 db
- Feed Imp ..... 50 Ohms
- Balun ..... 4:1, 5 kW

MECHANICAL

- Element Length ..... 37 ft.
- Boom Length ..... 21 ft.
- Turn Radius ..... 21 ft.
- Windload ..... 6.5 sq. ft.
- Weight ..... 50 lbs.
- Mast ..... 2 in.

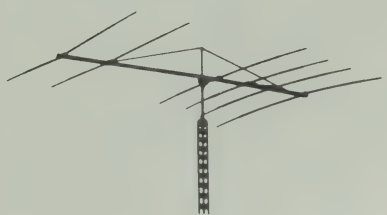
15 METERS

15M-6 World Class Extra

SPECIFICATIONS

ELECTRICAL

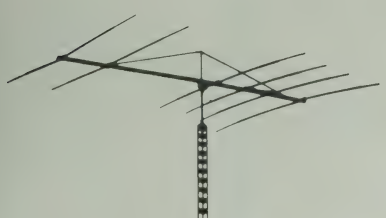
- Bandwidth ..... 21.0–21.5 MHz
- Gain ..... 11.0 dBd
- VSWR 1.5:1
- F/B ..... 30 db
- Feed Imp ..... 50 Ohms
- Balun ..... 4:1, 5 kW



MECHANICAL

- Element Length ..... 25 ft.
- Boom Length ..... 36 ft.
- Turn Radius ..... 23 ft.
- Windload ..... 8.5 sq. ft.
- Weight ..... 60 lbs.
- Mast ..... 2 in.

15M-6 LD



SPECIFICATIONS

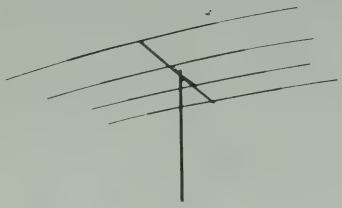
ELECTRICAL

- Bandwidth ..... 21.0–21.450 MHz
- Gain ..... 10.5 dBd
- VSWR 1.5:1
- F/B ..... 30 db
- Feed Imp ..... 50 Ohms
- Balun ..... 4:1, 5 kW

MECHANICAL

- Element Length ..... 25 ft.
- Boom Length ..... 36 ft.
- Turn Radius ..... 23 ft.
- Windload ..... 5 sq. ft.
- Weight ..... 34 lbs.
- Mast ..... 2 in.

15M-4



SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 21.0–21.5 MHz
- Gain ..... 7.7 dBd
- VSWR 1.5:1
- F/B ..... 25 db
- Feed Imp ..... 50 Ohms
- Balun ..... 4:1, 5 kW

MECHANICAL

- Element Length ..... 25 ft.
- Boom Length ..... 14 ft.
- Turn Radius ..... 14 ft.
- Windload ..... 3 sq. ft.
- Weight ..... 18 lbs.
- Mast ..... 2 in.

10 METERS

10M-6 World Class Extra

SPECIFICATIONS

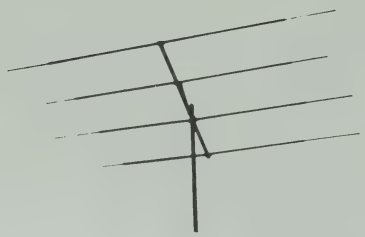
ELECTRICAL

- Bandwidth ..... 28–30 MHz × 1 MHz
- Gain ..... 11 dBd
- VSWR 1.5:1
- F/B ..... 30 db
- Feed Imp ..... 50 Ohms
- Balun ..... 4:1, 5 kW

MECHANICAL

- Element Length ..... 18 ft.
- Boom Length ..... 27.5 ft.
- Turn Radius ..... 16.5 ft., 8 in.
- Windload ..... 4 sq. ft.
- Weight ..... 29 lbs.
- Mast ..... 2 in.

10M-4



SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 28–30 MHz × 1 MHz
- Gain ..... 7.7 dBd
- VSWR 1.5:1
- F/B ..... 25 db
- Feed Imp ..... 50 Ohms
- Balun ..... 4:1, 5 kW

MECHANICAL

- Element Length ..... 18 ft.
- Boom Length ..... 10 ft.
- Turn Radius ..... 10.5 ft.
- Windload ..... 2.25 sq. ft.
- Weight ..... 12 lbs.
- Mast ..... 2 in.

HF VERTICALS

160V Vertical

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 1.8–2.0 MHz × 20 kHz
- Gain ..... 0 dBd
- VSWR 1.5:1
- Feed Imp ..... 50 Ohms

MECHANICAL

- Height ..... 24 ft.
- Windload ..... 1.4 sq. ft.
- Weight ..... 10 lbs.
- Mast ..... 2 in.

40-10V Vertical

SPECIFICATIONS

ELECTRICAL

- Frequency .....7, 14, 21, 28 MHz
- Gain .....0 dBd
- VSWR 1.5:1
- Feed Imp 50

MECHANICAL

- Height ..... 26.5 ft.
- Windload .....1.8 sq. ft.
- Weight ..... 23 lbs.
- Mast ..... 2 in. O.D.

VHF

For 6 meters, Mirage/KLM offers 6M-5, 6M-7LD, and 6M-7LB. For 2 meters, new offerings include the 2M-11X, the high-performance 2M-16LBX, and the 2M-22C circular. The 2M-16LBX is tailored for EME with a conservative gain rating of 14.5 dBd at 144 MHz, while the 2M-22C provides optimum performance for the Oscar enthusiast. Continuing in the 2 meter line are the tried-and-true 2M-4X, 2M-8, and the 2M-13LBA. For 220 MHz, three designs are available. The new general-purpose 220-14X and the high-performance long-boom 220-22LBX, as well as the 220-7 are offered.

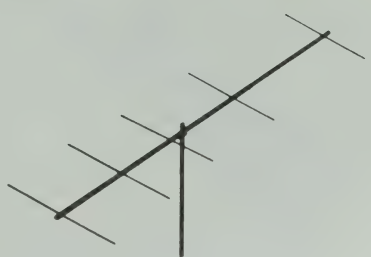
6 METER

6M-5

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 50–52 MHz
- Gain ..... 9.7 dBd
- VSWR 1.5:1
- F/B .....30 dB
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 4:1, 5 kW



MECHANICAL

- Element Length ..... 57¾ in.
- Boom Length .....11.75 ft.
- Turn Radius..... 7.5 ft.
- Windload .....1.7 sq. ft.
- Weight ..... 9 lbs.
- Mast ..... 2 in.

6M-7LD (Light Duty)

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 50–51 MHz
- Gain .....10.5 dBd
- VSWR 1.5:1
- F/B .....25 dB
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 4:1, 5 kW

MECHANICAL

- Element Length ..... 61 in.
- Element Diameter ..... ⅜ in.
- Boom Length .....20 ft.
- Boom Diameter .....1.5 in.
- Turn Radius.....13 ft.
- Weight ..... 12 lbs.
- Windload .....2.5 sq. ft.
- Mast ..... 2 in.

6M-7LB (Long Boom)

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 50–52 MHz
- Gain ..... 11.5 dBd
- VSWR ..... 1.5:1 (50–51 MHz)
- F/B ..... 20 db
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 4:1, 5 kW

MECHANICAL

- Element Length ..... 57 ft., 1½ in.
- Element Diameter ..... ½ in.
- Boom Length ..... 25.75 ft.
- Boom Diameter ..... 2 in.
- Turn Radius ..... 16 ft.
- Windload ..... 3 sq. ft.
- Weight ..... 22 lbs.
- Mast ..... 2 in.

2 METER

2M-16LBX

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... Spec. 144–146
  Usable 143–148
- Gain 144–14.5
  145–14.5 —— 146–14.4
  147–14.3 —— 148–13.2
- VSWR 1.2:1
- Beamwidth ..... E = 26°, H = 29°
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 4:1, 2 kW Coax

MECHANICAL

- Element Length ..... 40⅝ in. max.
- Boom Length ..... 28 ft. (4.1 wavelengths)
- Turn Radius ..... 15 ft., 5 in.
- Windload ..... 2.44 sq. ft.
- Weight ..... 10 lbs.
- Mast ..... 2⅛ in. max.

2M-13LBA

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 144–148 MHz
- Gain ..... 13.3 dBd
- VSWR 1.2:1
- Beamwidth ..... E = 28°, H = 33°
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 4:1, 2 kW Coax

MECHANICAL

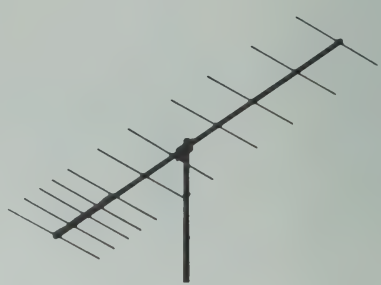
- Element Length ..... 40⅝ in. max.
- Boom Length ..... 21.5 ft.
- Turn Radius ..... 13 ft.
- Windload ..... 1.6 sq. ft.
- Weight ..... 9 lbs.
- Mast ..... 2 in.

2M-11X

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... Spec. 144–146
  Usable 143–148
- Gain ..... 12.5 dBd
- VSWR 1.2:1
- Feed Imp ..... 50 Ohms
- Balun ..... 4:1, 2 kW Coax
- Mount ..... Horiz. or Vert.



MECHANICAL

- Element Length ..... 40⅝ in. max.
- Boom Length ..... 15 ft., 4 in.
- Turn Radius ..... 9 ft.
- Windload ..... 1.38 sq. ft.
- Weight ..... 5.5 lbs.
- Mast ..... 2⅛ in. max.

2M-8

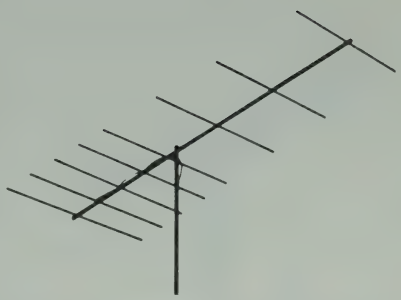
SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 144–148 MHz
- Gain ..... 10.3 dBd
- VSWR 1.2:1
- F/B ..... 30 dB
- Feed Imp ..... 50 Ohms, unbal.
- Beamwidth ..... 50°
- Balun ..... 1:1 Sleeve, 2 kW

MECHANICAL

- Element Length ..... 40 in. max.
- Boom Length ..... 7.25 ft.
- Turn Radius ..... 4 ft.
- Windload ..... 0.65 sq. ft.
- Weight ..... 4 lbs.
- Mast ..... 2 in.



2M-4X

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 144–148 MHz
- Gain ..... 8.5 dBd
- VSWR 1.5:1
- F/B ..... 20 dB
- Feed Imp ..... 50 Ohms, unbal.
- Beamwidth ..... 62°
- Balun ..... 4:1, 2 kW Coax

MECHANICAL

- Element Length ..... 40 ft., ⅝ in.
- Boom Length ..... 4.2 ft.
- Turn Radius ..... 4 ft.
- Windload ..... 0.25 sq. ft.
- Weight ..... 2 lbs.
- Mast ..... 2 in.
- Mounting ..... Rear

2 METER CIRCULAR

2M-22C

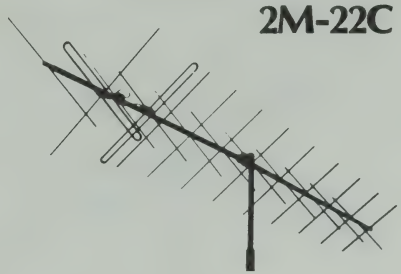
SPECIFICATIONS

ELECTRICAL

- Bandwidth .... Spec 144–146 MHz
  Usable 144–148 MHz
- Gain ..... 13 dBdc
  better than 1.5:1
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 4:1 Coax, 2 kW PEP*
- Ellipticity ..... 3 dB max.
- Beamwidth ..... 32°

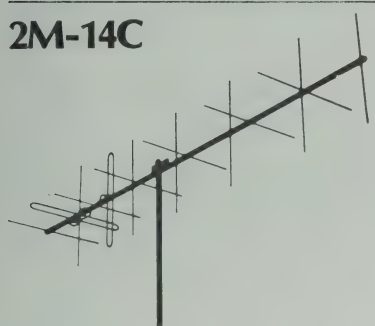
MECHANICAL

- Element Length ..... 41 in. max.
- Boom Length ..... 19 ft., 1 in.
- Turn Radius ..... 13 ft.
- Windload ..... 1.85 sq. ft.
- Weight ..... 11 lbs.
- Mast ..... 1½–2 in.



**Derate to 600W when using CS-3 Switcher (supplied)*

2M-14C



**Derate to 600W when using CS-3 Switcher (supplied)*

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 144–150 MHz
- Gain ..... 11 dBdc
- VSWR 1.2:1
- F/B ..... 20 dB
- Beamwidth ..... 38°
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 4:1, 2 kW Coax*
- Ellipticity ..... 3 dB max.

MECHANICAL

- Element Length .. 40 ft., ⅝ in. max.
- Boom Length ..... 12 ft., 9 in.
- Turn Radius ..... 7 ft.
- Windload ..... 1.25 sq. ft.
- Weight ..... 7.5 lbs.
- Mast ..... 2 in.

220 MHz

220-22 LBX

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 220–225 MHz
- Gain ..... 15.6 dBd
- VSWR 1.5:1
- F/B Ratio ..... 20 dB
- F/S Ratio ..... 30 dB
- Beamwidth ..... E = 22°, H = 25°
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 4:1 Coax, 2 kW PEP

MECHANICAL

- Boom Length ..... 29.9 ft. (6.65 wavelengths)
- Weight ..... 10 lbs.
- Windload ..... 2.0 sq. ft.
- Turn Radius ..... 16 ft., 4 in.
- Mast ..... 2⅛ in. max. diam.

220-14X

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 220–225 MHz
- Gain ..... 13.5 dBd
- VSWR 1.5:1
- F/B Ratio ..... 20 dB min.
- F/S ..... 30 dB min.
- Beamwidth ..... E = 28°, H = 32°
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 4:1 Coax, 2 kW PEP

MECHANICAL

- Boom Length ..... 14 ft., 7 in. (3.27 wavelengths)
- Weight ..... 6.5 lbs.
- Windload ..... 1.33 sq. ft.
- Turn Radius ..... 110 ft.
- Mast ..... 2⅛ in. max. diam.

220-7

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 219–226 MHz
- Gain ..... 8.8 dBd
- Beamwidth ..... E = 54°, H = 60°
- VSWR 1.5:1
- F/B Ratio ..... 20 dB min.
- F/S Ratio ..... 30 dB min.
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 1:1 Sleeve, 2 kW

MECHANICAL

- Boom Length ..... 4.75 ft.
- Weight ..... 3 lbs.
- Windload ..... 0.73 max.
- Turn Radius ..... 33 ft.
- Mounting ..... Rear/Center
- Mast ..... 1½ in. O.D.
- Weight ..... 9 lbs.

432 MHz

432-30 LBX

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 430–440 MHz
- Gain ..... 17.3 dBd
- VSWR 1.2:1
- F/B ..... 20 dB min.
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 1:1, 2 kW
- Beamwidth ..... E = Plane 19° H = Plane 20°

MECHANICAL

- Element Length ..... 14 in. max. (9.6 wavelength)
- Boom Length ..... 21 ft., 11 in.
- Turn Radius ..... 12 ft., 4 in.
- Windload ..... 1.71 sq. ft.
- Weight ..... 9 lbs.
- Mast ..... 2⅛ in. max.

432-20 LBX

SPECIFICATIONS

ELECTRICAL

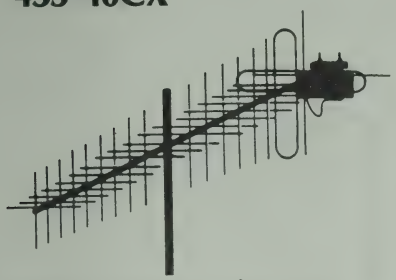
- Bandwidth ..... 425–440 MHz
- Gain ..... 15.3 dBd
- VSWR 1.2:1
- F/B ..... 20 dB min.
- Beamwidth ..... E = 26°, H = 28°
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 1:1, 2 kW
- Mount ..... Center

MECHANICAL

- Element Length ..... 14 in. max. (5.42 wavelengths)
- Boom Length ..... 12 ft., 4 in.
- Turn Radius ..... 84 in.
- Windload ..... 0.9 sq. ft.
- Weight ..... 5 lbs.
- Mast ..... 1½ in.

435 MHz

435-40CX



**250W maximum when using CS-2 Switcher (supplied)*

SPECIFICATIONS

ELECTRICAL

- Bandwidth .... Spec. 420–440 MHz, Usable 410–450 MHz
- Gain ..... 15.2 dBdC @ 436 MHz
- VSWR 1.5:1
- Beamwidth ..... 25°
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 4:1, Coax 1 kW*
- Mount ..... Center

MECHANICAL

- Element Length .... 13.625 in. max.
- Boom Length ..... 175.5 in.
- Turn Radius ..... 105 in.
- Windload ..... 1.16 sq. ft.
- Weight ..... 10 lbs.
- Mast ..... 1½" max.
- Polarity .... Circular R.H. and L.H. switchable using CS-2

435-18C

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 420–450 MHz
- Gain ..... 12 dBdC
- VSWR 1.5:1
- F/B ..... 20 dB
- Feed Imp ..... 50 Ohms, unbal.
- Beamwidth ..... 34°
- Ellipticity ..... 3 dB max.
- Balun ..... 2–4:1, 1 kW*
- Mount ..... Center/Rear

MECHANICAL

- Element Length ..... 13.25 in. max.
- Boom Length ..... 3 ft.
- Turn Radius ..... 7 ft. max.
- Windload ..... 0.5 sq. ft.
- Weight ..... 4.5 lbs.
- Mast ..... 1½ in.
- Mount ..... Rear
- Polarity .... Circular R.H. and L.H. switchable using CS-2

**Derate to 250W when using CS-2 Switcher (supplied)*

UHF

Three new high performance designs highlight the Mirage/KLM lineup of 70 cm antennas. Optimized for use at 432 MHz, the 432-20LBX and 432-30LBX offer unparalleled performance for EME and terrestrial DXing. Eight 30LBX's will provide more gain than a 24-foot parabolic dish. The 30LBX is rated at a superb 17.3 dBd gain. The 20LBX is the replacement for the 432-16LBA, but provides at least 0.7 dB more gain. When high gain AND broad bandwidth are required, the 440-27 provides 13.5 dBd over the range. The new circularity-polarized 435-40CX will serve also as an excellent basis for an EME array. The advantages of circular polarization in minimizing the effects of Faraday rotation are well known. Continuing in the line of 70 cm antennas are the 440-6, 440-14, and 435-18C.

440 MHz

440-27

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 420–450 MHz
- Gain ..... 13.5 dBd
- VSWR 1.2:1
- F/B ..... 20 dB
- Beamwidth ..... E = 28°, H = 32°
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 1:1, 2 kW
- Mount ..... Center

MECHANICAL

- Element Length ..... 14 in. max.
- Boom Length ..... 12 ft.
- Turn Radius ..... 6 ft.
- Windload ..... 0.74 sq. ft.
- Weight ..... 7.5 lbs.
- Mast ..... 1½ in.

440-14

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 420–470 MHz
- Gain ..... 11.5 dBd
- VSWR 1.2:1
- F/B ..... 20 dB
- Beamwidth ..... 48°
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 1:1, 2 kW

MECHANICAL

- Element Length ..... 14 in. max.
- Boom Length ..... 4.75 ft.
- Turn Radius ..... 4.75 ft.
- Windload ..... 0.53 sq. ft.
- Weight ..... 4 lbs.
- Mast ..... 1½ in.
- Mount ..... Rear or Center

440-6

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 420–470 MHz
- Gain ..... 8 dBd
- VSWR 1.2:1
- F/B ..... 20 dB
- Beamwidth ..... 60°
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 1:1, 2 kW

MECHANICAL

- Element Length ..... 14 in. max.
- Boom Length ..... 2 ft.
- Turn Radius ..... 2 ft.
- Windload ..... 0.2 sq. ft.
- Weight ..... 1.2 lbs.
- Mast ..... 1½ in.
- Mount ..... Rear

VHF-UHF VERTICALS

Mirage/KLM offers a selection of omnidirectional stand-alone vertical antennas. These antennas will provide outstanding performance without the need of a ground plane. The JV-6 and the JV-2 will give 3 dBd more gain than a ground plane, while the JV-2X, JV-220X, and the JV-440X gives a 5 dBd improvement.

JV-6

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 50–54 MHz (× 800 kHz)
- Gain ..... 3 dB/gnd plane
- VSWR 1.5:1
- Feed Imp ..... 50 Ohms, unbal.

MECHANICAL

- Element Length ..... 15 ft. max.
- Weight ..... 5 lbs.
- Mast ..... 2 in. O.D. max.

JV-2

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 144–148 MHz (× 2 MHz)
- Gain ..... 3 dB/gnd plane
- VSWR 1.2:1
- Feed Imp ..... 50 Ohms, unbal.

MECHANICAL

- Element Length ..... 60 in.
- Weight ..... 1.5 lbs.
- Mast ..... 2 in. O.D. max.

JV2X

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 144–148 MHz (× 3 MHz)
- Gain ..... 5 dB/gnd plane
- VSWR 1.5:1
- Feed Imp ..... 50 Ohms, unbal.

MECHANICAL

- Element Length ..... 11 ft.
- Weight ..... 2.1 lbs.
- Mast ..... 2 in. O.D. max.

JV220X

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 219–226 MHz (× 4 MHz)
- Gain ..... 5 dB/gnd plane
- VSWR 1.5:1
- Feed Imp ..... 50 Ohms, unbal.

MECHANICAL

- Element Length ..... 88 in.
- Weight ..... 2 lbs.
- Mast ..... 2 in. O.D. max.

JV-440X

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 420–470 MHz
- Gain ..... 5 dB/gnd plane
- VSWR 1.5:1
- Feed Imp ..... 50 Ohms, unbal.

MECHANICAL

- Weight ..... 1.1 lbs.
- Mast ..... 2 in. O.D. max.

COMMERCIAL COMMUNICATIONS
Antennas

Conservative Ratings!

Antenna specifications based on "real world" performance and measurements. All gain figures use the recognized half-wave dipole reference.

Coverage!

Mirage/KLM's use of two or more driven elements produces outstanding bandwidth coupled with nearly constant gain and low VSWR. Use one Mirage/KLM antenna where coverage requirements would normally call for two or more!

Construction!

All aluminum components of strong, weather-resistant 6063-T832 alloy. All stainless steel hardware except for U-bolts, Lexan, Teflon and other quality insulative materials.

134-138-14CP

SPECIFICATIONS

ELECTRICAL

- Model C134-138-14CP
- Coverage ..... 134–138 MHz
- Gain ..... 11 dBdC
- VSWR ..... 1.5:1 and less
- Beamwidth ..... 3 dB pts: 48
- Mounting ..... Center

MECHANICAL

- Elements 7H/7V
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... (2) 4:1, 1 kW
- Boom Length ..... 13 ft., 9 in.
- Boom Diameter ..... 1½ in.
- Weight ..... 8 lbs.
- Mast ..... 2 in.

152–174 MHz ANTENNAS

This versatile series of VHF antennas utilizes Mirage/KLM's multi-driven element system for broadband coverage while maintaining consistent gain and low VSWR. All beam antennas are suitable for horizontal or vertical polarization. All are supplied with Mirage/KLM's own copper/Teflon Airline balun for a perfect match and clean patterns.

162-174-11

SPECIFICATIONS

ELECTRICAL

- Model 162-174-11
- Coverage ..... 162–174 MHz
- Gain ..... 12.5 dBd
- VSWR ..... 1.5:1 and less
- Beamwidth ..... 42°
- Mounting ..... Center

MECHANICAL

- Elements 11
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 1:1 sleeve, 2 kW
- Boom Length ..... 11 ft.
- Boom Diameter ..... 1½ in.
- Weight ..... 5¼ lbs.
- Mast ..... 2 in.

162-174-7

SPECIFICATIONS

ELECTRICAL

- Model 162-174-7
- Coverage ..... 162–174 MHz
- Gain ..... 9 dBd
- VSWR ..... 1.5:1 and less
- Beamwidth ..... 54°
- Mounting ..... Center/Rear

MECHANICAL

- Elements 7
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 1:1 sleeve, 2 kW
- Boom Length ..... 5 ft., 3 in.
- Boom Diameter ..... 1 in.
- Weight ..... 3½ lbs.
- Mast ..... 1½ in.

152-162-11

SPECIFICATIONS

ELECTRICAL

- Model 152-162-11
- Coverage ..... 152–162 MHz
- Gain ..... 12.5 dBd
- VSWR ..... 1.5:1 and less
- Beamwidth ..... 42°
- Mounting ..... Center

MECHANICAL

- Elements 11
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 1:1 sleeve, 2 kW
- Boom Length ..... 12 ft.
- Boom Diameter ..... 1½ in.
- Weight ..... 5½ lbs.
- Mast ..... 2 in.

152-162-9

SPECIFICATIONS

ELECTRICAL

- Model 152-162-9
- Coverage ..... 152–162 MHz
- Gain ..... 11.5 dBd
- VSWR ..... 1.5:1 and less
- Beamwidth ..... 48°
- Mounting ..... Center

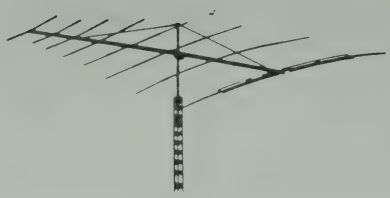
MECHANICAL

- Elements 9
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 1:1 sleeve, 2 kW
- Boom Length ..... 8 ft.
- Boom Diameter ..... 1½ in.
- Weight ..... 4.5 lbs.
- Mast ..... 2 in.

= HF LOG PERIODIC

Mirage/KLM's Log Periodic Antennas offer extended coverage of the amateur bands and intermediate frequencies. The 10-30-7LPA, for example, covers 20, 15, and 10 meters plus the WARC bands and many MARS frequencies. The addition of the 40M-1 dipole module provides 40 meter operation as well. This system is also available complete as the 7.2/10-30-7LPA. Continuous coverage 6 to 30 MHz. A two-antenna system with significant advantages over a full-sized single-boom model. Windloading, weight, tower size and rotational requirements are substantially reduced without any sacrifice in performance. The 6-30-15LPA can be mounted on a common tower and fed with a single 50 ohm line or mounted on adjacent towers and fed by separate lines.

7.2/10-30LPA



SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 7.2/10-30 MHz
- Gain ..... 3/7 dBd typ.
- VSWR ..... 1.5:1 typ.
- F/B ..... 10/15 dB
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 4:1, 5 kW

MECHANICAL

- Element Length ..... 46 ft.
- Boom Length ..... 42 ft.
- Turn Radius ..... 32 ft.
- Windload ..... 12 sq. ft.
- Weight ..... 100 lbs.
- Mast ..... 2 in.

10-30-7LPA

SPECIFICATIONS

ELECTRICAL

- Bandwidth ..... 10-30 MHz
- Gain ..... 7 dBd typ.
- VSWR ..... 1.5:1 typ.
- F/B ..... 15 dB
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 4:1, 5 kW

MECHANICAL

- Element Length ..... 43 ft.
- Boom Length ..... 30 ft.
- Turn Radius ..... 26 ft.
- Windload ..... 8.25 sq. ft.
- Weight ..... 70 lbs.
- Mast ..... 2 in.

6-30-15LPA

SPECIFICATIONS

ELECTRICAL

- Coverage ..... 6-30 MHz
- Gain ..... 5.5 to 8 dBd
- VSWR ..... 2:1 and less, typ.
- F/B ..... 15 dB, typ.
- Feed Imp ..... 50 Ohms, unbal.
- Baluns ..... (3) Ferrite 4:1, 4 kW PEP
- Weight ..... 150 lbs (6-12-8)
  70 lbs (10-30-7)

MECHANICAL

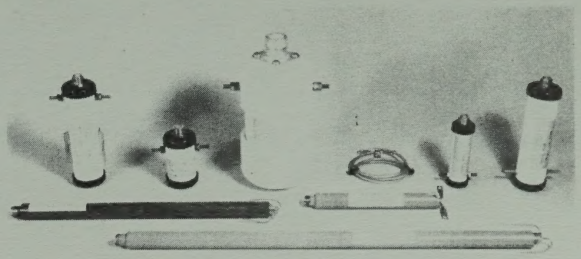
- Elements 8 (6-12-8)
  7 (10-30-7)
- Element Length ..... 48 ft.
- Boom Length ..... 46 ft. (6-12-8)
  30 ft. (10-30-7)
- Boom Diameter ..... 3 in.
- Turn Radius ..... 33 ft.
- Windload ..... 24 sq. ft.
- Mast ..... 2 in./3 in. standard

Antenna Couplers/Power Divider

Broadband power divider/couplers are available for use in stacking VHF/UHF beams. These units replace the quarter-wave matching cable sections, barrel connectors, and "T" connectors that are ordinarily used. Matching input and output to 50 ohm impedances is automatic.

Use of these low loss devices results in significant savings in cost and complexity, and substantial reduction in cable and connector losses.

Construction is of copper tubing assuring minimal loss and providing excellent physical rigidity. The units are supplied with type "N" input and output connectors only. Power rating is conservatively 2 kW peak envelope power. They are "natural" for any array from two to thirty-two antennas. For experimenters, the 70 cm CS-2 Switcher is available as an accessory.



Part numbers indicate the band and the number of output ports.

2M-4N	220-2N	220-4N	440-2N	440-4N

Baluns

When using balanced antennas with unbalanced coaxial lines, it is advisable to include a proper balun in order to ensure optimum broadband performance, low VSWR, and undistorted patterns due to R.F. currents flowing in the coaxial sleeve.

Sleeve Baluns

Mirage/KLM quarter-wave sleeve baluns feature the same rigid low-loss copper tubing used in the coupler/poer dividers. The air dielectric design assures lowest R.F. losses. SO-239 (UHF) connectors are standard for 2 meter and 220 MHz models, but type "N" connectors are available at no additional cost. Type "N" connectors are standard on the 450 MHz models.

Part Number	Impedance (Ohms)
2M-50	50 to 50
2M-50 (N)	50 to 50
220-50	50 to 50
220-50 (N)	50 to 50
440-40 (N)	50 to 50

Coaxial Baluns

Mirage/KLM coaxial baluns are constructed of Teflon dielectric, silver-plated shield and center conductor coaxial cable. The new high-frequency 1:1 balun is rated conservatively at 5 kW. The VHF/UHF 4:1 baluns are rated at 2 kW.

Part Number	Impedance (Ohms)
3-60-1:1 Coax (5 kW High Freq.)	50 to 50
2M-4:1 Coax (2 kW)	50 to 200
220-4:1 Coax (2 kW)	50 to 200
440-4:1 Coax (2 kW)	50 to 200

Ferrite Baluns

Mirage/KLM ferrite baluns are constructed of high efficiency ferrite cores and Teflon-insulated silver-plated wire. The 3-60-4:1 balun contains four of these cores and is conservatively rated at 5 kW. The new 5 kW rating is made possible by the use of two additional oversize cores which are 35% larger than those used in the older 4 kW PEP balun which contained only two cores. Part number indicates the frequency range in MHz and the impedance ratio.

Model Number	Impedance (Ohms) (Unbalanced to Balanced)
3-60 MHz 1:1, 5 kW PEP	50 to 50
3-60 MHz 4:1, 5 kW PEP	50 to 200
6-30 MHz 4:1, 5 kW PEP	50 to 200
6-24 MHz 4:1, 10 kW PEP	50 to 200
50-150 MHz 4:1, 500W PEP	50 to 200
50-150 MHz 1:1, 500W PEP	50 to 50

Stacking Frame

A) 2M × 2C B) 2M × 4 C) 220 × 2
D) 220 × 4 C) 432 × 2C D) 432 × 4C